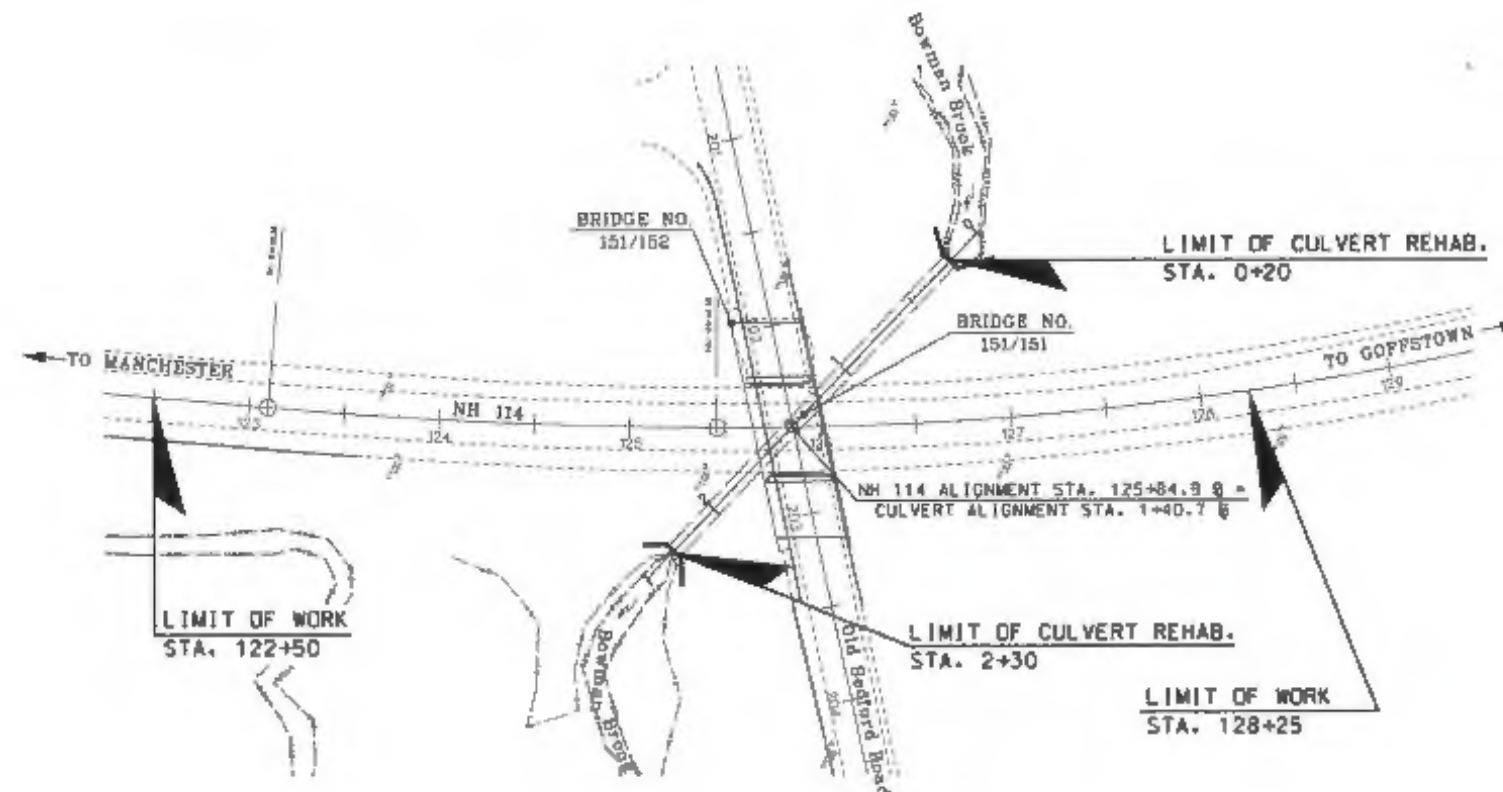
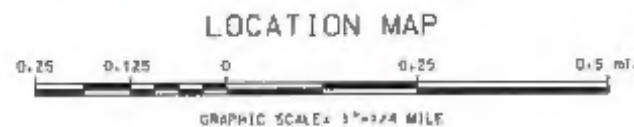
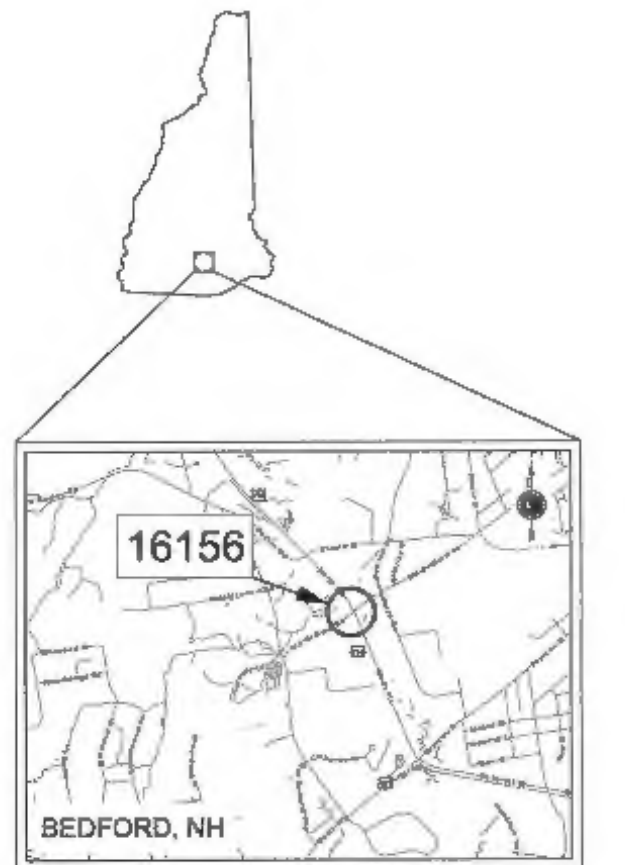


THE STATE OF NEW HAMPSHIRE  
DEPARTMENT OF TRANSPORTATION  
**CONSTRUCTION PLANS**

FEDERAL PROJECT X-A001 (160)  
NH PROJECT NO. 16156  
NH ROUTE 114  
**BOWMAN BROOK CULVERT REHABILITATION**

DESIGN DATA	
AVERAGE DAILY TRAFFIC 2016	22,000
AVERAGE DAILY TRAFFIC 2036	
PERCENT OF TRUCKS	5%
DESIGN SPEED	45 MPH
LENGTH OF 16156 PROJECT	0.11 MILE



DATE 05/2017  
DATE 05/2017  
DRAWN BY T.J.M.  
CHECKED BY DEM

PLANS PREPARED BY:  
STANTEC CONSULTING SERVICES, INC.  
200 SOUTH RIVER ROAD, BUILDING C, BEDFORD, NH 03110  
TEL (603) 869-3000 FAX (603) 869-3070



**TOWN OF BEDFORD**  
**COUNTY OF HILLSBOROUGH**  
SCALE: 1" = 50'

<b>NHDOT</b> THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION			
RECOMMENDED FOR APPROVAL		8/15/2017	
DIRECTOR OF PROJECT DEVELOPMENT		DATE	
APPROVED: <i>William J. ...</i>		8/16/17	
ASSISTANT COMMISSIONER AND CHIEF ENGINEER		DATE	
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
X-A001(160)	16156	1	23

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE PAGE
2	INDEX OF SHEETS AND GENERAL NOTES
3,4	STANDARD SYMBOLS
5	ACCESS TYPICAL SECTION
6	SUMMARY OF QUANTITIES
	BRIDGE PLANS
7-23	NH ROUTE 114 OVER BOWMAN BROOK (BRIDGE NO. 151/151)

GENERAL NOTES

- 1

FDR STANDARD PLANS. SEE "STANDARD PLANS FOR ROAD CONSTRUCTION" DATED 2010 (A BOUND BOOK).
- 2

HIGH TENSION OVERHEAD TRANSMISSION LINES ARE LOCATED THROUGHOUT THE PROJECT WITH CROSSINGS AT VARIOUS LOCATIONS AND RUNNING ALONG THE ROAD THROUGHOUT THE PROJECT EVEN ON REGULAR POLES. THE CONTRACTOR IS ADVISED THAT EXTREME CAUTION WILL BE REQUIRED IN THE OPERATION OF EQUIPMENT, ESPECIALLY CRANES AND PILE DRIVING EQUIPMENT.
- 3

MODIFY SUPERELEVATION ON EXISTING CURVES BY THE USE OF A LEVELING COURSE TO THE RATES INDICATED ON THE PLANS OR AS ORDERED.
- 4

EXISTING DELINEATORS AND WITNESS MARKERS THAT ARE REMOVED AND DETERMINED BY THE ENGINEER TO BE IN ACCEPTABLE CONDITION SHALL BE RESET (SUBSIDIARY). ADDITIONAL DELINEATORS AND WITNESS MARKERS ORDERED WILL BE PAID UNDER THE APPROPRIATE ITEMS OF THE CONTRACT.
- 5

NO EXISTING MONUMENTS, BOUNDS, OR BENCHMARKS SHALL BE DISTURBED WITHOUT FIRST MAKING PROVISIONS FOR RELOCATION.
- 6

PERFORM ALL WORK WITHIN THE EXISTING RIGHT-OF-WAY, UNLESS OTHERWISE SHOWN ON THE PLANS OR AS ORDERED BY THE ENGINEER.
- 7

REMOVE UNPROTECTED PROJECT MARKERS (SUBSIDIARY).
- 8

SURVEY DATA FOR THIS PROJECT WAS COLLECTED BY SDR AND THE FIELD NOTES CAN BE FOUND IN THE SURVEY FIELD BOOK(S) 13399 & 10096. COORDINATES ARE NEW HAMPSHIRE STATE PLANE COORDINATES OF NAD83, 1986 ADJUSTMENT AND THE BEARINGS ARE GRID. ELEVATIONS ARE REFERENCED TO NGVD 1929.
- 9

QUANTITIES FOR EMBANKMENT AND EXCAVATION FOR SLOPE ROUNDINGS AS SHOWN ON THE TYPICALS HAVE NOT BEEN CALCULATED AND ARE NOT INCLUDED IN THE QUANTITY SUMMARIES, AND ARE CONSIDERED SUBSIDIARY TO THE APPROPRIATE 203 ITEMS.

THE FOLLOWING GENERAL NOTES  
WILL BE USED ON THIS PROJECT:

1	2		4	5	6	7	8				

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

INDEX OF SHEETS  
AND GENERAL NOTES

REVISION DATE	BY	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9-1-2016	02_index_sheet	16156	2	23

## GENERAL

EDGE OF PAVEMENT TRAVELED WAY			
DRIVEWAYS			
BUILDINGS			
FOUNDATION			
LEACH FIELD			
BRIDGE CROSSINGS			
STEPS AND WALK			
INTERMITTENT WATER COURSE			
SHORE LINE			
POTENTIAL WET AREA SYMBOL			
BRUSH OR WOODS LINE			
TREES (PLANS)			
TREE OR STUMP (CROSS-SECTIONS)			
HEDGE			
MONITORING WELL			
WELL			
FLAG POLE			

ORIGINAL GROUND (TYPICALS)	
ROCK OUTCROP	
ROCK LINE (TYPICALS & SECTIONS ONLY)	
GUARDRAIL (label type)	
JERSEY BARRIER	
CURB (LABEL TYPE)	
STONE WALL	
RETAINING WALL (LABEL TYPE)	
FENCE (LABEL TYPE)	
SIGNS	
GAS PUMP	
FUEL TANK (ABOVE GROUND)	
STORAGE TANK FILLER CAP	
SEPTIC TANK	
GRAVE	
MAILBOX	
VENT PIPE	
SATELLITE DISH ANTENNA	
PHONE	
GROUND LIGHT/LAMP POST	
BORING LOCATION	
TEST PIT	
INTERSTATE NUMBERED HIGHWAY	
UNITED STATES NUMBERED HIGHWAY	
STATE NUMBERED HIGHWAY	

## SHORELAND - WETLAND

### WETLAND DESIGNATION AND TYPE

DELINEATED WETLAND	
ORDINARY HIGH WATER	
TOP OF BANK	
TOP OF BANK & ORDINARY HIGH WATER	
NORMAL HIGH WATER	
WIDTH AT BANK FULL	
PRIME WETLAND	
PRIME WETLAND 100' BUFFER	
NON-JURISDICTIONAL DRAINAGE AREA	
COWARDIN DISTINCTION LINE	
TIDAL BUFFER ZONE	
DEVELOPED TIDAL BUFFER ZONE	
HIGHEST OBSERVABLE TIDE LINE	
MEAN HIGH WATER	
MEAN LOW WATER	
VERNAL POOL	
SPECIAL AQUATIC SITE	
REFERENCE LINE	
WATER FRONT BUFFER	
NATURAL WOODLAND BUFFER	
PROTECTED SHORELAND	
INVASIVE SPECIES LABEL	
INVASIVE SPECIES	

### FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY	
100 YEAR FLOODPLAIN BOUNDARY	
FLOODWAY	

### ENGINEERING

CONSTRUCTION BASELINE	
PC, PT, POT (ON CONST BASELINE)	
PI (IN CONSTRUCTION BASELINES)	
INTERSECTION OR EQUATION OF TWO LINES	
ORIGINAL GROUND LINE (PROFILES AND CROSS-SECTIONS)	
PROFILE GRADE LINE (PROFILES AND CROSS-SECTIONS)	
CLEARING LINE	
SLOPE LINE	
SLOPE LINE (FILL)	
SLOPE LINE (CUT)	
PROFILES AND CROSS SECTIONS: ORIGINAL GROUND ELEVATION (LEFT) FINISHED GRADE ELEVATION (RIGHT)	

SHEET 1 OF 2

STATE OF NEW HAMPSHIRE				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
STANDARD SYMBOLS				
REVISION DATE	DDP	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	03_stdsymbl	16156	3	23

## DRAINAGE

MANHOLE			
CATCH BASIN		(existing)	
DRIP INLET			
DRAINAGE PIPE (existing)			label size & type)
DRAINAGE PIPE (PROPOSED)			
UNDERDRAIN (existing) w/ FLUSHING BASIN	show direction of flow		label size & type)
UNDERDRAIN (PROPOSED) w/ FLUSHING BASIN			
HEADER (existing & PROPOSED)			(with stone outlet protection)
			METAL or PLASTIC
END SECTION (existing & PROPOSED)			RCP
OPEN DITCH (PROPOSED)			
EROSION CONTROL/ STONE SLOPE PROTECTION			

**BOUNDARIES / RIGHT-OF-WAY**

RIGHT-OF-WAY LINE		(label type)
RR RIGHT-OF-WAY LINE		
PROPERTY LINE		
PROPERTY LINE (COMMON OWNER)		
TOWN LINE		
COUNTY LINE		
STATE LINE		
NATIONAL FOREST		
CONSERVATION LAND		
BENCH MARK / SURVEY DISK		
BOUND	  (PROPOSED)	
STATE LINE/ TOWN LINE MONUMENT	 	
NHDOT PROJECT MARKER		
IRON PIPE OR PIN	 ip	
DRILL HOLE IN ROCK	 dh	
TAX MAP AND LOT NUMBER	 1642/341 6.20 Ac. ±	
PROPERTY PARCEL NUMBER		
HISTORIC PROPERTY		









## UTILITIES

	EXISTING	PROPOSED
TELEPHONE POLE		
POWER POLE		
JOINT OCCUPANCY		
MISCELLANEOUS/UNKNOWN POLE		
GUY POLE OR PUSH BRACE		
LIGHT POLE		
LIGHT ON POWER POLE		
LIGHT ON JOINT POLE		
POLE STATUS: REMOVE, LEAVE, PROPOSED, OR TEMPORARY AS APPLICABLE e.g.,		
RAILROAD		
RAILROAD SIGN		
RAILROAD SIGNAL		
UTILITY JUNCTION BOX		
OVERHEAD WIRE		
UNDERGROUND UTILITIES		
WATER (on existing lines label size, type and note if abandoned)		
SEWER		
TELEPHONE		
ELECTRIC		
GAS		
LIGHTING		
INTELLIGENT TRANSPORTATION SYSTEM		
FIBER OPTIC		
WATER SHUT OFF		
GAS SHUT OFF		
HYDRANT		
MANHOLES		
SEWER		
TELEPHONE		
ELECTRICAL		
GAS		
UNKNOWN		

### TRAFFIC SIGNALS / ITS

	existing	PROPOSED
MAST ARM (existing)		
OPTICOM RECEIVER		
OPTICOM STROBE		
TRAFFIC SIGNAL		
PEDESTAL WITH PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON UNIT		
SIGNAL CONDUIT		
CONTROLLER CABINET		
METER PEDESTAL		
PULL BOX		
LOOP DETECTOR (QUADRUPOLE)		
LOOP DETECTOR (RECTANGULAR)		
CAMERA POLE (CCIV)		
FIBER OPTIC DELINEATOR		
FIBER OPTIC SPLICE VAULT		
ITS EQUIPMENT CABINET		
VARIABLE SPEED LIMIT SIGN		
DYNAMIC MESSAGE SIGN		
ROAD AND WEATHER INFO SYSTEM		

### CONSTRUCTION NOTES

CURB MARK NUMBER - BITUMINOUS	B-1
CURB MARK NUMBER - GRANITE	G-1
CLEARING AND GRUBBING AREA	
DRAINAGE NOTE	
EROSION CONTROL NOTE	
FENCING NOTE	
GUARDRAIL NOTE	
JTS NOTE	
LIGHTING NOTE	
TRAFFIC SIGNAL NOTE	

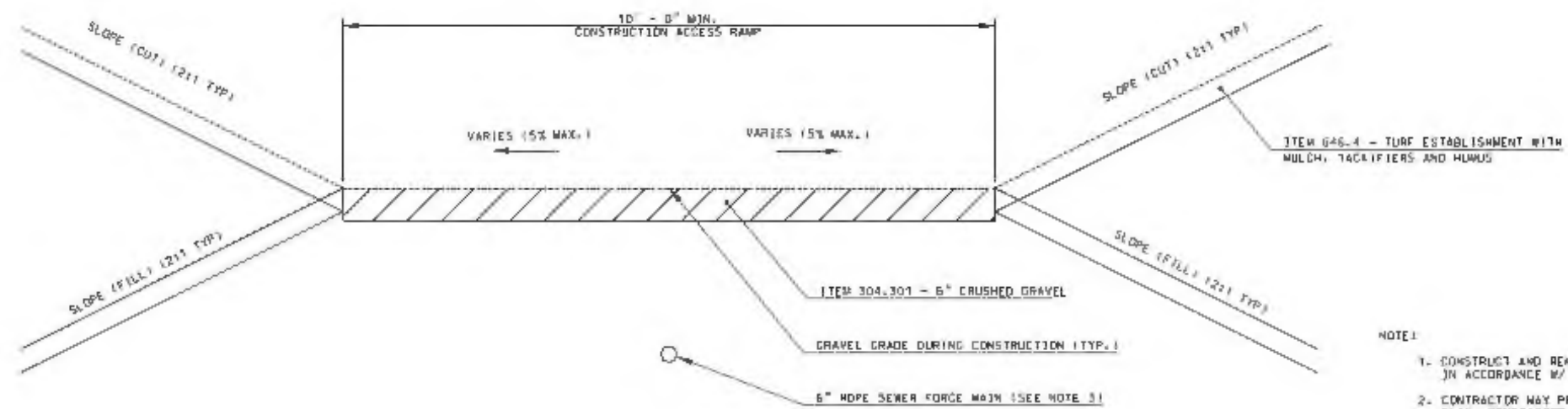
SHEET 2 OF 2

STATE OF NEW HAMPSHIRE				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
<i>STANDARD SYMBOLS</i>				
SYMBOL	DESCRIPTION	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
6	04-stdsymlb2	16156	4	23

SQR PROCESSED	%DOT	DATE
NEW DESIGN	TJM	08/2017
SHEET CHECKED	DEM	08/2017
AS BUILT DETAILS		
DATE		

REVISIONS AFTER PROPOSAL					
NUMBER	DATE	STATION	STATION	DESCRIPTION	



TYPICAL SECTION - ACCESS FOR BRIDGE CONSTRUCTION  
(ITEMS 500.0201 & 500.0202)

(NOT TO SCALE)

NOTE 1

1. CONTRACTOR TO REMOVE ACCESS FOR BRIDGE CONSTRUCTION  
IN ACCORDANCE W/ ITEMS 500.0201 & 500.0202
2. CONTRACTOR MAY PROPOSE ALTERNATE ACCESS  
PLAN. CONTRACTOR IS RESPONSIBLE FOR ANY  
PERMITTING CHARGES. UTILITY IMPACTS, OR  
ADDITIONAL ROW, IF NECESSARY DUE TO  
ALTERNATE ACCESS PLAN, PLAN MUST BE APPROVED  
IN ADVANCE BY NHDOT.
3. CONTRACTOR TO PROTECT EXISTING 6" HOPE SEWER  
FORCE MAIN TO WEST OF NH 114. CONTRACTOR SHALL  
MAINTAIN MIN. 4' OF COVER OVER PIPE AT ALL TIMES  
ITEM 500.0202 L

STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<i>ACCESS TYPICAL SECTION</i>			
RD#	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
05-16156-TYP	16156	5	23





**SUMMARY OF QUANTITIES (ESTIMATED)**  
**THIS INFORMATION IS FOR BIDDING PURPOSES ONLY**

**DRAINAGE SUMMARY**

REF. NO.	REMOVAL OF EXISTING PIPE 3-24" DIAMETER	REMOVAL OF EXISTING PIPE OVER 24" DIAMETER	UNCLASSIFIED CHANNEL EXCAVATION	RPRAP, CLASS V	SIMULATED STREAMBED MATERIAL	GEOTEXTILE, PERM. CONTROL CL. 1, NON-WOVEN	CENTRIFUGALLY CAST CONCRETE LINER FOR 60" CMP	15" R.C. PIPE, 20000	2" CORR. POLYETHYLENE END SECTION	12" TEMPORARY DRAIN PIPE	STEEL WITNESS MARKERS	REMARKS
	LF	LF	CY	CY	CY	SY	LF	LF	EA	LF	EA	
<b>NH ROUTE 114</b>												
B1							210	18				
B2		14	165	45	15	142		18		1		
B3		14	167	123	18	162				1		
E1	19											REMOVE 19' x 15" RDP
E2												
E3	21											REMOVE 21' x 15" RDP
T1									1	88		
T2												REMOVE 88' x 12" TEMP. DRAIN PIPE & END SECTION (SUBSIDIARY TO NOTE T1)
<b>SUB-TOTAL</b>	<b>40</b>	<b>28</b>	<b>362</b>	<b>200</b>	<b>31</b>	<b>324</b>	<b>210</b>	<b>32</b>	<b>1</b>	<b>88</b>	<b>2</b>	
<b>ROUNDING</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>28</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	
<b>TOTAL</b>	<b>40</b>	<b>30</b>	<b>370</b>	<b>210</b>	<b>35</b>	<b>350</b>	<b>210</b>	<b>32</b>	<b>1</b>	<b>90</b>	<b>2</b>	

INCIDENTAL ITEMS			
ITEM NO.	ITEM	QUANTITY	UNIT
201.1	CLEARING AND GRUBBING (F)	0.1	A
201.801	INVASIVE SPECIES CONTROL TYPE 1	360	SY
202.7	REMOVAL OF GUARDRAIL	360	LF
203.11	COMMON EXCAVATION - LRS	410	CY
203.6543	GUARDRAIL, EAGRT OFFSET PLATFORM, TL3	1	U
204.601	EMBARKMENT IN PLACE	20	CY
206.19	COMMON STRUCTURE EXCAVATION EXPLORATORY	70	CY
304.32	CRUSHED GRAVEL FOR SHOULDER LEVELING	25	TON
606.012	W6X9 STEEL POST REPLACEMENTS FOR BEAM GUARDRAIL POSTS	15	EA
606.0122	W6X9 STEEL POST ASSEMBLIES FOR BEAM GUARDRAIL POSTS	15	EA
606.1234	BEAM GUARDRAIL (TERMINAL UNIT TYPE EAGRT, TL 3) (STEEL POST)	1	U
606.18001	31" W-BEAM GUARDRAIL WITH 8" OFFSET BLOCK (STEEL POST)	360	LF
606.34202	SINGLE FACED ASYMMETRICAL TRANSITION RAIL, RIGHT (STEEL POST)	2	U
606.417	PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL	400	LF
606.91	RESETTING OR SETTING GUARDRAIL	25	LF
606.9513	TEMP. IMPACT ATTENUATION DEVICE (REDIRECTIVE) TEST LEVEL 3	4	U
615.034	RELOCATING TRAFFIC SIGN, TYPE C	1	U
618.61	UNIFORMED OFFICERS WITH VEHICLE	*	\$
618.7	FLAGGERS	250	HR
619.1	MAINTENANCE OF TRAFFIC	1	U
619.25	PORTABLE CHANGEABLE MESSAGE SIGN	2	U
621.2	RETROREFLECTIVE BEAM GUARDRAIL DELINEATOR	6	EA
621.31	SINGLE DELINEATOR WITH POST	4	EA
621.32	DOUBLE DELINEATOR WITH POST	1	EA
632.0104	RETROREFLECTIVE PAINT PAVE. MARKING, 4" LINE	2300	LF
643.22	FERTILIZER FOR REFERTILIZATION	0.3	TON
645.3	EROSION STONE	350	TON
645.44	TEMPORARY SLOPE STABILIZATION, TYPE D (WILDLIFE FRIENDLY)	2450	SY
645.512	COMPOST SOCK FOR PERIMETER BERM	1100	LF
645.52	RYEGRASS FOR TEMPORARY EROSION CONTROL	50	LB
645.531	SILT FENCE	1100	LF
645.7	STORMWATER POLLUTION PREVENTION PLAN (SWPPP)	1	U
645.71	MONITORING SWPPP AND EROSION AND SEDIMENT CONTROLS	80	HR
646.4	TURF ESTABLISHMENT WITH MULCH, TACKIFIERS AND HUMUS	0.6	A
670.104	TEMPORARY PORTABLE LIGHTING	2	U
692	MOBILIZATION	1	U
697.11	INVASIVE SPECIES CONTROL AND MANAGEMENT PLAN	1	U
697.91	PROJECT OPERATIONS PLAN	1	U
699	MISCELLANEOUS TEMPORARY EROSION AND SEDIMENT CONTROL	*	\$
1010.15	FUEL ADJUSTMENT	*	\$

\* NOT A BID ITEM

500.0201 - ACCESS FOR BRIDGE CONSTRUCTION			
SUBSIDIARY ITEMS			
ITEM NO.	ITEM	QUANTITY	UNIT
203.1	COMMON EXCAVATION	144	CY
203.601	EMBARKMENT-IN-PLACE	65	CY
304.301	CRUSHED GRAVEL	36	CY
NOTE: THIS LIST SHOULD NOT BE CONSIDERED TO BE A LIST OF ALL SUBSIDIARY WORK PRESENT IN THE PROJECT. REFER ALSO TO THE PROPOSAL, SPECIAL PROVISIONS AND THE STANDARD SPECIFICATIONS.			

ITEM 500.0202 - ACCESS FOR BRIDGE CONSTRUCTION			
SUBSIDIARY ITEMS			
ITEM NO.	ITEM	QUANTITY	UNIT
203.1	COMMON EXCAVATION	90	CY
203.601	EMBARKMENT-IN-PLACE	52	CY
304.301	CRUSHED GRAVEL	23	CY
NOTE: THIS LIST SHOULD NOT BE CONSIDERED TO BE A LIST OF ALL SUBSIDIARY WORK PRESENT IN THE PROJECT. REFER ALSO TO THE PROPOSAL, SPECIAL PROVISIONS AND THE STANDARD SPECIFICATIONS.			

PERMANENT CONSTRUCTION SIGN TABLE									
(INCLUDED IN ITEM NO. 619.1)									
SIGN NO.	DESCRIPTION	SIZE (ft)		SF	NO. REQ.	TOTAL AREA (SF)	PORTABLE MOUNTS	U-CHANNEL POSTS	REMARKS
		W	H						
G20-2A	"END ROAD WORK"	4	2	8	4	32	4		BLACK/ORANGE
R50-1	"NH LAW WORK ZONE"	6	4	24	2	48	2		BLACK/WHITE
W20-1a	"ROAD WORK AHEAD"	4	4	16	2	32	2		BLACK/FLUORESCENT ORANGE
W20-1b	"ROAD WORK 500 FT"	4	4	16	2	32	2		BLACK/FLUORESCENT ORANGE
W20-1c	"ROAD WORK 1000 FT"	4	4	16	2	32	2		BLACK/FLUORESCENT ORANGE
W20-1e	"ROAD WORK 1/2 MILE"	4	4	16	2	32	2		BLACK/FLUORESCENT ORANGE
NOTE: The estimated quantities of "Permanent Controls" are hereby listed. The contractor is responsible for all "Operational Controls" required under section 619 of the NHDOT Specifications and the Manual of Uniform Traffic Control Devices (MUTCD), Part									



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
SUMMARY OF QUANTITIES			
BID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
06_055	16156	6	23



**INDEX OF BRIDGE SHEETS**

NO.	SHEET TITLE
1	GENERAL PLAN
2	BRIDGE NOTES
3	SITE PLAN
4	ROADWAY AND CONSTRUCTION ACCESS PLAN
5	WATER DIVERSION PLAN
6	BORING LOGS (SHEET 1 OF 4)
7	BORING LOGS (SHEET 2 OF 4)
8	BORING LOGS (SHEET 3 OF 4)
9	BORING LOGS (SHEET 4 OF 4)
10	INLET FOOTING DETAILS
11	INLET HEADWALL DETAILS
12	INLET WINGWALL DETAILS
13	OUTLET FOOTING DETAILS
14	OUTLET HEADWALL DETAILS
15	OUTLET WINGWALL DETAILS
16	CULVERT INLET AND OUTLET DETAILS
17	REINFORCING SCHEDULE

**HYDRAULIC DATA**

DRAINAGE AREA:	3.67 SQ MI.
DESIGN FLOOD $Q_{100}$ :	710 CFS
DESIGN VELOCITY:	2.11 FT/SEC
DESIGN FLOOD ELEVATIONS:	235.43
$Q_{100}$ ELEVATIONS:	235.43
$Q_{50}$ ELEVATIONS:	232.83
$Q_{10}$ ELEVATIONS:	225.23

**STATE OF NEW HAMPSHIRE**  
DEPARTMENT OF TRANSPORTATION • BUREAU OF BRIDGE DESIGN

PROJECT NO.	BRIDGE NO.	DATE	STATE PROJECT
111-0000	111-0000	06/13	10110

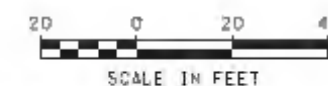
LOCATION: NH ROUTE 111 OVER BOWMAN BROOK

**GENERAL PLAN**

REVISIONS AFTER APPROVAL	BY	DATE	CHECKED	TAT	DATE
DESIGNED	DEM	06/2017	CHECKED	TAT	06/2017
DRAWN	TWK	06/2017	CHECKED	TAT	06/2017
QUANTITIES	TAT	06/2017	CHECKED	DEM	06/2017
ISSUED DATE	06/2017		PROJECT NO.	111-0000	
REV. DATE			REV. NO.	7	

1 OF 17  
128-3-2  
TOTAL SHEETS: 23

DRAINAGE AREA:	3.67 SQ MI.
DESIGN FLOOD $Q_{100}$ :	710 CFS
DESIGN VELOCITY:	2.11 FT/SEC
DESIGN FLOOD ELEVATION:	235.43
$Q_{100}$ ELEVATION:	235.43
$Q_{50}$ ELEVATION:	232.83
$Q_{10}$ ELEVATION:	225.23

STATE OF NEW HAMPSHIRE  
DEPARTMENT OF TRANSPORTATION • BUREAU OF BRIDGE DESIGN

10W'S	90110000	BUDGET NO	151/15	STATE PROJECT	16150
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LOCATION	NH ROUTE 118 OVER BOWMAN BROOK
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## GENERAL PLAN

REVISED AFTER PROPOSAL		BY	DATE	WF	DATE	1 OF 17
DESIGNED		DEM	06/2017	CHICKED	TAT	06/2017
DRAWN		TJW	06/2017	CHICKED	TAT	06/2017
QUANTITIES		TAT	06/2017	CHICKED	DEM	06/2017
ISSUE DATE		PERSONAL PRINT NO		RESET NO		128-3-2
REV. DATE		X-A001 (160)		7		23

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399</
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128-3-2

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DESIGN LOADS, MATERIALS AND SPECIFICATIONS

1. DESIGN LOADS: HL-93
2. DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN (LRFD)
3. SPECIFICATIONS: AASHTO 2014 LRFD BRIDGE DESIGN SPECIFICATIONS AS AMENDED  
AASHTO BRIDGE CONSTRUCTION SPECIFICATIONS WITH INTERIMS  
AASHTO 2016 STANDARD SPECIFICATIONS FOR ROAD & BRIDGE  
CONSTRUCTION AS AMENDED
4. FOUNDATION DATA: REINFORCED CONCRETE FOOTINGS SUPPORTED ON BEDROCK WITH  
ONE FOOT OF STRUCTURAL FILL, NOMINAL BEARING RESISTANCE  
OF 12 TSF WITH A 0.45 RESISTANCE FACTOR. NOMINAL  
SLIDING RESISTANCE (TAN  $\delta$  OF 34 DEGREES WITH A 0.8  
RESISTANCE FACTOR.
5. REINFORCING STEEL: AASHTO M31 ASTM A615 GRADE 60
6. CONCRETE:  
FOOTINGS:  
ITEM 520.213, CONCRETE CLASS B, FOOTINGS (ON SOIL) (F)  
3000 psi  
HEADWALLS AND WINGWALLS:  
ITEM 520.12, CONCRETE CLASS A, ABOVE FOOTINGS (F)  
3000 psi

GENERAL NOTES

1. EXISTING BRIDGE PLANS ARE AVAILABLE ON-LINE IN THE BID PACKAGE ON THE INVITATION TO  
BID WEB PAGE DURING THE BIDDING PERIOD. AFTER THE CONTRACT HAS BEEN AWARDED, A SET  
OF EXISTING PLANS WILL BE FORWARDED TO THE CONTRACTOR UPON REQUEST.
2. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS OF THE EXISTING  
STRUCTURES AND SHALL BE PREPARED TO MAKE ANY ADJUSTMENTS REQUIRED TO PROPERLY COMPLETE  
THE CONSTRUCTION OF PROPOSED STRUCTURES.
3. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO ENSURE THAT DEBRIS DOES NOT FALL  
INTO THE WATERWAY. THE WATER LEVEL OF THE EDWANA BROOK MAY VARY FROM WHAT WHICH IS SHOWN.  
ALL COSTS FOR PROTECTIVE STRUCTURES OR SHIELDING REQUIRED OR ORDERED SHALL BE PAID UNDER  
ITEM 202.42 AND SHALL INCLUDE ERECTION, MAINTENANCE, AND REMOVAL OF TEMPORARY STRUCTURES  
OF OTHER SUCH METHODS AS APPROVED BY THE ENGINEER.
4. NO SCAFFOLDS SHALL BE ERECTED OR OPERATIONS CONDUCTED IN THE WATERWAY, UNLESS APPROVED BY  
THE ENGINEER.
5. NO EXISTING MONUMENTS, BOUNDS, OR BENCHMARKS SHALL BE DISTURBED WITHOUT FIRST MAKING  
PROVISIONS FOR RELOCATION.
6. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4". UNLESS NOTED OTHERWISE.
7. SHEAR KEYS SHALL BE 3" HIGH BY ONE-THIRD THE THICKNESS OF THE WALL, CENTERED, UNLESS  
NOTED OTHERWISE.
8. FOR BORING NOTES SEE BRIDGE SHEET 6.
9. FOR HYDRAULIC DATA SEE BRIDGE SHEET 1.

CONSTRUCTION ACCESS NOTES

1. ITEM 500.0201 AND 500.0202, ACCESS FOR BRIDGE CONSTRUCTION, SHALL INCLUDE THE DESIGN,  
CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ALL TEMPORARY ACCESS MEASURES SELECTED BY THE  
CONTRACTOR FOR THE BRIDGE CONSTRUCTION, INCLUDING ACCESS ACROSS EDWANA BROOK BETWEEN THE  
HEADWALLS AND WINGWALLS AND ACCESS FROM THE ROADWAY DOWN TO THE BROOK LEVEL AT BOTH  
HEADWALLS. SEE THE SPECIAL PROVISION FOR ITEMS 500.0201 AND 500.0202 FOR ADDITIONAL  
INFORMATION.
2. TEMPORARY FILLS CONSTRUCTED ACROSS WETLAND AREAS UNDER THIS ITEM SHALL BE LOCATED  
WITHIN THE ALLOWABLE WETLAND IMPACT AREAS SHOWN ON THE WETLAND PERMIT AND WITHIN THE  
EASEMENTS SHOWN ON THE SITE PLAN. CLEAN STONE WITH UNDERLYING GEOTEXTILE SHALL BE  
USED FOR THE TEMPORARY FILLS WITHIN THE WETLAND IMPACT AREAS. ALL COSTS SHALL BE  
SUBSIDIARY TO ITEM 500.0201 AND 500.0202.

REINFORCEMENT NOTES

1. REINFORCEMENT IN THE BOTTOM OF FOOTINGS SHALL HAVE 3" MINIMUM CLEAR COVER.  
ALL OTHER REINFORCEMENT SHALL HAVE A 2 1/2" MINIMUM CLEAR COVER, UNLESS OTHERWISE  
NOTED.
2. PLACE REINFORCING STEEL TO AVOID WEEPERS.
3. REINFORCING LEGEND: SP = SPACE, SPL = SPLICE, FS = FAR SIDE, NS = NEAR SIDE,  
BOT = BOTTOM, ALT = ALTERNATING, CON = CONE.
4. REINFORCING SHALL BE PAID UNDER ITEM 544, REINFORCING STEEL (F).

HEADWALL AND WINGWALL NOTES

1. WEEPERS SHALL BE PLACED SYMMETRICALLY 10'-0" APART AND CENTERED AT 12" ABOVE  
THE TOP OF FOOTING. WEEPERS SHALL BE 4" DIAMETER AND SLOPED TO DRAIN AT  
12:1. ALL COSTS WILL BE SUBSIDIARY TO ITEM 520.12.
2. ITEM 536.2, BARRIER MEMBRANE, PEEL AND STICK - VERTICAL SURFACES (F), 2' WIDE,  
SHALL BE PLACED CENTERED OVER ALL VERTICAL CONSTRUCTION JOINTS WITH PROTECTION  
BOARD (SUBSIDIARY).
3. ITEM 534.3, WATER REPELLENT (SILANE-SILOXANE), SHALL BE APPLIED TO ALL EXPOSED  
CONCRETE SURFACES OF HEADWALLS AND WINGWALLS TO 1'-0" BELOW FILL LINES.

EXISTING CULVERT REMOVAL NOTES

1. ITEM 202.42, REMOVAL OF EXISTING PIPE, OVER 24" DIAMETER, UNLESS OTHERWISE SHOWN  
ON THE PLANS, SHALL INCLUDE THE FOLLOWING:  
- COMPLETE REMOVAL OF THE WIPED END PORTIONS OF THE EXISTING CULVERT TO THE  
LIMITS SHOWN ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
2. DURING REMOVAL OPERATIONS, EXTREME CARE SHALL BE TAKEN NOT TO DAMAGE THE  
EXISTING CULVERT THAT IS TO REMAIN IN PLACE. ANY DAMAGE SHALL BE IMMEDIATELY  
REPORTED TO THE ENGINEER AND REPAIRED AS DIRECTED, AT THE CONTRACTOR'S EXPENSE.
3. EXCAVATION, TEMPORARY EARTH SUPPORT AND GRADING, AND BACKFILL NOT INCLUDED  
IN OTHER ITEMS, BUT REQUIRED FOR REMOVAL OF THE EXISTING STRUCTURE SHALL BE  
SUBSIDIARY TO ITEM 202.42.

COFFERDAM NOTES

1. ALL COFFERDAM ITEMS COVERED UNDER SECTION 504 OF THE SPECIFICATIONS SHALL BE  
DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NH. THE CONTRACTOR  
SHALL SUBMIT STAMPED WORKING DRAWINGS AND CALCULATIONS FOR DOCUMENTATION IN  
ACCORDANCE WITH 105.02.
2. THE COFFERDAM ITEMS ARE INCLUDED IN THE CONTRACT FOR THE PURPOSE OF SUPPORTING  
EXCAVATIONS FOR THE INLET AND OUTLET HEADWALLS AND WINGWALLS BELOW OVERLYING  
FACILITIES (E.G., EXISTING SEWER AND ROADWAY). EXCAVATION BACKSLOPES IN SOIL BELOW  
THE OVERLYING FACILITIES SHALL BE NO STEEPER THAN 1:1.5H:1V. FLATTER BACKSLOPES SHALL  
BE USED IF THE CONTRACTOR'S STABILITY CALCULATIONS INDICATE INSUFFICIENT SOIL SLOPE  
STABILITY AT 1.5H:1V.
3. THE LOCATION AND LIMITS OF THE COFFERDAMS DETAILED ON THE PLANS ARE SCHEMATIC AND  
NOT INTENDED FOR FINAL DESIGN OF THE COFFERDAM. THE COFFERDAM LIMITS AND LOCATION  
MAY BE ADJUSTED BY THE CONTRACTOR TO ACCOMMODATE THE CONTRACTOR'S MEANS AND METHODS  
OF CONSTRUCTION. THE COFFERDAM SHALL BE DESIGNED TO MEET THE REQUIREMENTS OF SECTIONS  
503 AND 504, THE FOUNDATION NOTES AND ALL ENVIRONMENTAL PERMITS.
4. ALL COSTS ASSOCIATED WITH THE DESIGN, INSTALLATION, MAINTENANCE, AND REMOVAL OF  
THE COFFERDAM WILL BE PAID FOR UNDER COFFERDAM ITEMS 503.201 AND 503.202. ALL  
DEWATERING COSTS FOR THE INLET AND OUTLET HEADWALL AND WINGWALL EXCAVATIONS WILL  
BE PAID UNDER ITEM 503.101.
5. COFFERDAMS THAT ARE CUT OFF AND LEFT IN PLACE AT THE CONTRACTOR'S CHOICE SHALL BE  
CUT OFF A MINIMUM OF 3 FEET BELOW FINAL GRADE. NO ADDITIONAL PAYMENT WILL BE MADE  
FOR COFFERDAMS THAT ARE CUTOFF AND LEFT IN PLACE.
6. ALL COSTS ASSOCIATED WITH THE RE-DESIGN AND RE-INSTALLATION OF COFFERDAMS DUE TO  
SUBSURFACE CONDITIONS ENCOUNTERED DURING THE COFFERDAM INSTALLATION THAT ARE  
DIFFERENT FROM WHAT THE COFFERDAM DESIGNER ASSUMED AND/OR INTERPRETED FROM THE  
AVAILABLE SUBSURFACE INFORMATION SHALL BE SUBSIDIARY TO THE ASSOCIATED COFFERDAM  
ITEM. SECTION 102.05 SHALL BE REFERENCED FOR ADDITIONAL INFORMATION REGARDING  
THE USE OF SUBSURFACE INFORMATION PROVIDED IN THE CONTRACT.

WATER DIVERSION STRUCTURE NOTES

1. THE WATER DIVERSION STRUCTURE ITEM IS INCLUDED IN THE CONTRACT FOR THE PURPOSE OF  
DIVERTING EDWANA BROOK AND ANY SURFACE WATER FROM:  
- INLET AND OUTLET HEADWALL EXCAVATIONS  
- WINGWALL EXCAVATIONS  
- PIPE LINER INSTALLATION  
AND DEWATERING FROM:  
- INLET AND OUTLET HEADWALL EXCAVATIONS  
- WINGWALL EXCAVATIONS  
- PIPE LINER INSTALLATION  
THIS SINGLE ITEM SHALL BE USED FOR BOTH THE INLET AND OUTLET LOCATIONS WITH A CONTRACT  
QUANTITY OF ONE UNIT. ALL COSTS ASSOCIATED WITH THE DESIGN, INSTALLATION, DEWATERING,  
MAINTENANCE, EARTH Dikes, TEMPORARY PIPES, STEEL SHEETING, PUMPING, TREATMENT OF PUMPED  
WATER, AND ALL OTHER MEASURES SELECTED BY THE CONTRACTOR TO COMPLETE THE WORK AND  
REMOVAL OF THE WATER DIVERSION WILL BE PAID FOR UNDER WATER DIVERSION STRUCTURE ITEM  
503.101. THE CONTRACTOR SHALL SUBMIT A WATER DIVERSION PLAN IN ACCORDANCE WITH 503.3.1.2.  
THE SUBMITTAL SHALL INCLUDE THE PROPOSED METHOD OF DEWATERING AND THE METHOD OF DISPOSAL  
OF WATER PUMPED FROM THE EXCAVATIONS.
2. THE WATER DIVERSION SHALL BE DESIGNED TO ACCOMMODATE THE BOTTOM OF EXCAVATION GRADE  
INDICATED ON THE PLANS INCLUDING ANY AREAS WHERE THE ROCK EXCAVATION EXTENDS BELOW  
THE REQUIRED ELEVATION. SEE FOUNDATION NOTES FOR ADDITIONAL INFORMATION.
3. THE WATER DIVERSION STRUCTURE SHALL BE DESIGNED, CONSTRUCTED AND MAINTAINED IN A  
MANNER THAT MEETS THE REQUIREMENTS OF SECTION 503, 504, THE FOUNDATION NOTES, AND  
ALL APPLICABLE ENVIRONMENTAL REQUIREMENTS.
4. THE WATER LEVEL WITHIN THE HEADWALL AND WINGWALL EXCAVATIONS SHALL BE MAINTAINED  
BELOW THE BOTTOM OF FOOTING GRADE, SO THE FOOTING CONCRETE CAN BE PLACED IN THE DRY.  
DEWATERING SHALL BE CONTINUOUS UNTIL THE HEADWALLS AND WINGWALLS ARE BACKFILLED TO  
THE ELEVATION OF THE SURROUNDING WATER TABLE.

UTILITY NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION  
AND SIZE OF ALL EXISTING UTILITIES, SHOWN AND NOT SHOWN, PRIOR TO CONSTRUCTION.  
THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING  
WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION SHALL BE TAKEN  
BEFORE PROCEEDING WITH THE WORK.
2. THE CONTRACTOR SHALL NOTIFY DIO-SAFE PRIOR TO CONSTRUCTION.
3. THE EXISTING 6" HOPE SEWER FORCE MAIN TO THE WEST (INLET SIDE) OF NH 11A SHALL BE  
PROTECTED THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING  
THE LOCATION OF THE MAIN AND SHALL PROTECT AND USE EXTREME CARE WHILE MOVING  
EQUIPMENT AND MATERIALS OVER IT. A MINIMUM OF 4' OF COVER OVER THE PIPE SHALL BE  
MAINTAINED AT ALL TIMES.

SUMMARY OF BRIDGE QUANTITIES - BR. NO. 151/151

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT
509.201	GRANULAR BACKFILL (BRIDGE) (F)	150	CY
500.0201	ACCESS FOR BRIDGE CONSTRUCTION	1	U
500.0202	ACCESS FOR BRIDGE CONSTRUCTION	1	U
503.101	WATER DIVERSION STRUCTURE	1	U
503.201	COFFERDAMS	1	U
503.202	COFFERDAMS	1	U
504.1	COMMON BRIDGE EXCAVATION (F)	368	CY
504.2	ROCK BRIDGE EXCAVATION	773	CY
508.	STRUCTURAL FILL	105	CY
520.12	CONCRETE CLASS B, ABOVE FOOTINGS (F)	38	CY
520.213	CONCRETE CLASS B, FOOTINGS (ON SOIL) (F)	68	CY
520.32	GROUTING VOIDS IN BACKFILL MATERIAL	70	CY
534.3	WATER REPELLENT (SILANE-SILOXANE)	5	GAL
536.2	BARRIER MEMBRANE, PEEL AND STICK - VERTICAL SURFACES (F)	70	SF
541.4	PVC WATERSTOP, NH TYPE 4 (F)	44	LF
544.	REINFORCING STEEL (F)	14507	LB
567.1	SILICONE JOINT SEALANT (F)	53	LF
1002.1	REPAIRS OR REPLACEMENTS AS NEEDED - BRIDGE STRUCTURES	4	U

\* NOT A BID ITEM

FOUNDATION NOTES

1. ALL FOOTINGS SHALL BE FOUNDED ON A MINIMUM 12 INCH THICK LAYER OF STRUCTURAL FILL,  
PLACED OVER THE ACCEPTABLE BEARING MATERIALS DESCRIBED BELOW. THE CONTRACTOR MAY  
SUBSTITUTE UP TO 12 INCHES OF CLEAN STONE STRUCTURAL FILL FOR THE CRUSHED GRAVEL  
STRUCTURAL FILL IN ACCORDANCE WITH 508.2.1.3 AT NO COST TO THE DEPARTMENT.
2. THE EXISTING MISCELLANEOUS FILL, THE NATURAL GLACIAL OUTWASH DEPOSIT, AND BEDROCK  
INCLUDING ANY WEATHERED AND FRACTURED BEDROCK ARE ACCEPTABLE FOR SUPPORT OF THE  
PROPOSED FOOTINGS FOR THE INLET AND OUTLET HEADWALLS AND WINGWALLS. EXCAVATION OF  
THESE MATERIALS BELOW THE SPECIFIED STRUCTURAL FILL THICKNESS IS NOT REQUIRED. ANY  
TOPSOIL, MOOD, OR OTHER UNSUITABLE MATERIALS ENCOUNTERED BELOW THE PROPOSED BOTTOM  
OF STRUCTURAL FILL GRADE SHALL BE EXCAVATED AND REPLACED WITH STRUCTURAL FILL, AS  
DIRECTED.
3. THE EXCAVATION TO FINAL GRADE AND THE CONTROL OF WATER SHALL BE CONDUCTED IN  
ACCORDANCE WITH SECTIONS 503 AND 504, AND IN A MANNER THAT PREVENTS DISTURBANCE OF  
THE FOUNDATION SUPPORT MATERIALS. PUMPING EQUIPMENT SHALL BE PROPERLY FILTERED TO  
PREVENT LOSS OF FINES. ANY DISTURBED AREAS SHALL BE OVER-EXCAVATED AND REPLACED  
WITH STRUCTURAL FILL AT THE CONTRACTOR'S EXPENSE. PUMP AREAS SHALL BE LOCATED  
OUTSIDE A 102'V SUPPORT LIMIT BELOW THE ABUTMENT AND WINGWALL FOOTINGS.
4. FOR LOCATIONS REQUIRING ROCK REMOVAL, THE REQUIRED ELEVATION FOR ROCK REMOVAL  
SHALL BE 12 INCHES BELOW THE FOOTING TO ACCOMMODATE THE 12 INCHES OF STRUCTURAL FILL.  
ANY ROCK REMOVED BELOW AN ELEVATION ONE FOOT LOWER THAN THE REQUIRED ELEVATION WILL BE  
CONSIDERED AS EXCESS REMOVAL AND WILL NOT BE PAID. NO PAYMENT WILL BE MADE FOR  
STRUCTURAL FILL THAT IS REQUIRED TO REPLACE EXCESS ROCK REMOVAL.
5. FRACTURES OR SEAMS IN THE BEDROCK SURFACE EXPOSED AT THE BOTTOM OF THE FOUNDATION  
EXCAVATION SHALL BE CLEANED AND GROUTED IN ACCORDANCE WITH 504.3.2, OR CHINKED WITH  
CLEAN STONE FOR STRUCTURAL FILL AS DIRECTED.
6. PROTRUDING COBBLES AND BOULDERS ENCOUNTERED AT THE FINAL EXCAVATION LEVEL SHOULD  
BE EITHER REMOVED AND REPLACED WITH STRUCTURAL FILL OR SPLIT TO PROVIDE A LEVEL  
SURFACE.

PIPE LINING NOTES

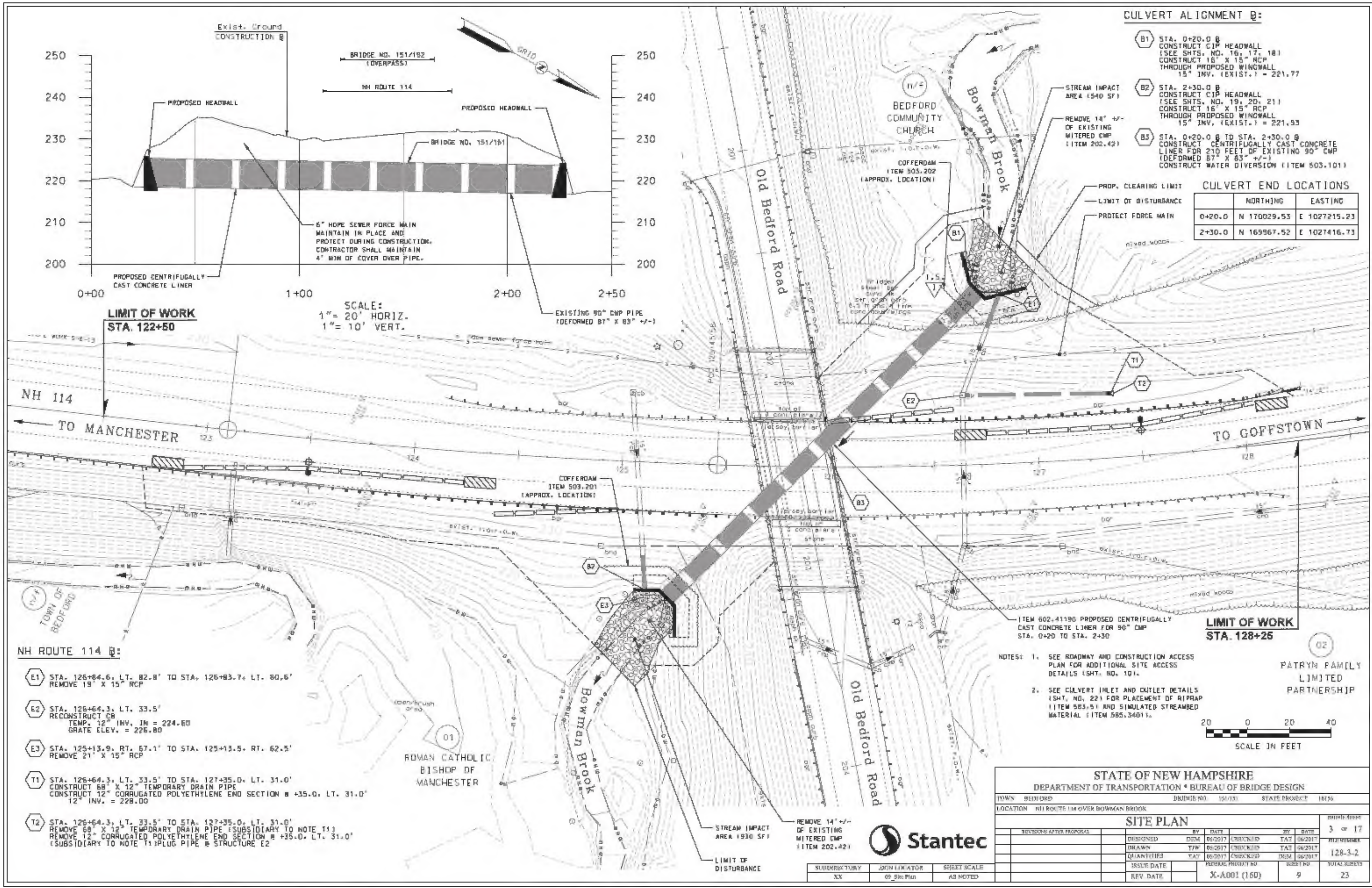
1. THE WORK SHALL CONSIST OF THE REPAIR OF THE CULVERT BY THE INSTALLATION OF A  
CEMENTITIOUS LINING CENTRIFUGALLY CAST IN PLACE FOR THE WATERPROOFING, SEALING,  
STRUCTURAL REINFORCEMENT AND CORROSION PROTECTION OF EXISTING CORRUGATED STEEL  
CULVERT PIPE. THE CENTRIFUGALLY CAST CONCRETE LINER SHALL EXTEND OVER THE  
SPECIFIED LENGTH FORMING A CONTINUOUS CONCRETE PIPE WITHIN A PIPE.
2. FOR ITEM 602.41190, CENTRIFUGALLY CAST CONCRETE LINER FOR 90" CMP, THE APPLICATION  
THICKNESS SHALL BE A MINIMUM OF 2", UNLESS THE STRUCTURAL CALCULATIONS SHOW A NEED  
FOR EVEN GREATER THICKNESS. SEE SPECIAL PROVISIONS FOR DETAILED REQUIREMENTS.
3. USE ITEM 520.32 TO GROUT ANY VOIDS FOUND IN THE BACKFILL MATERIAL SURROUNDING THE  
EXISTING CULVERT PRIOR TO INSTALLING THE CONCRETE LINER. SEE SPECIAL PROVISIONS  
FOR DETAILED REQUIREMENTS.



SUBDISCIPLINE	DRAWN BY	SHEET SCALE
BROOKSIDE	DR. BRIDGE NOTES	AS NOTED

STATE OF NEW HAMPSHIRE										
DEPARTMENT OF TRANSPORTATION • BUREAU OF BRIDGE DESIGN										
DRAWN BY		BRIDGE NO.		151/151		STATE PROJECT		16136		
LOCATION NH ROUTE 11A OVER EDWANA BROOK										
BRIDGE NOTES									2 OF 17	
REVISIONS AFTER PROPOSAL			BY		DATE		BY		DATE	
			DESIGNED		DEM		TAT		06/2017	
			DRAWN		TJM		TAT		06/2017	
			QUANTITIES		TAT		DEM		06/2017	
			ISSUE DATE		PERSONAL PROJECT NO		SHEET NO		TOTAL SHEETS	
			REV. DATE		X-A001 (160)		8		23	





CULVERT ALIGNMENT @:

- B1 STA. 0+20.0 @ CONSTRUCT CIP HEADWALL (SEE SHTS. NO. 16, 17, 18) CONSTRUCT 16" X 15" RCP THROUGH PROPOSED WINGWALL 15' INV. (EXIST.) = 221.77
- B2 STA. 2+30.0 @ CONSTRUCT CIP HEADWALL (SEE SHTS. NO. 19, 20, 21) CONSTRUCT 16" X 15" RCP THROUGH PROPOSED WINGWALL 15' INV. (EXIST.) = 221.93
- B3 STA. 0+20.0 @ TO STA. 2+30.0 @ CONSTRUCT CENTRIFUGALLY CAST CONCRETE LINER FOR 210 FEET OF EXISTING 90" CMP (DEFORMED 87" X 83" +/-) CONSTRUCT WATER DIVERSION (ITEM 503.101)

CULVERT END LOCATIONS

	NORTHING	EASTING
0+20.0	N 170029.53	E 1027215.23
2+30.0	N 169967.52	E 1027416.73

LIMIT OF WORK STA. 128+25

PATRYN FAMILY LIMITED PARTNERSHIP

- NOTES: 1. SEE ROADWAY AND CONSTRUCTION ACCESS PLAN FOR ADDITIONAL SITE ACCESS DETAILS (SHT. NO. 101).
- 2. SEE CULVERT INLET AND OUTLET DETAILS (SHT. NO. 221) FOR PLACEMENT OF RIPRAP (ITEM 503.51) AND SIMULATED STREAMBED MATERIAL (ITEM 503.3401).

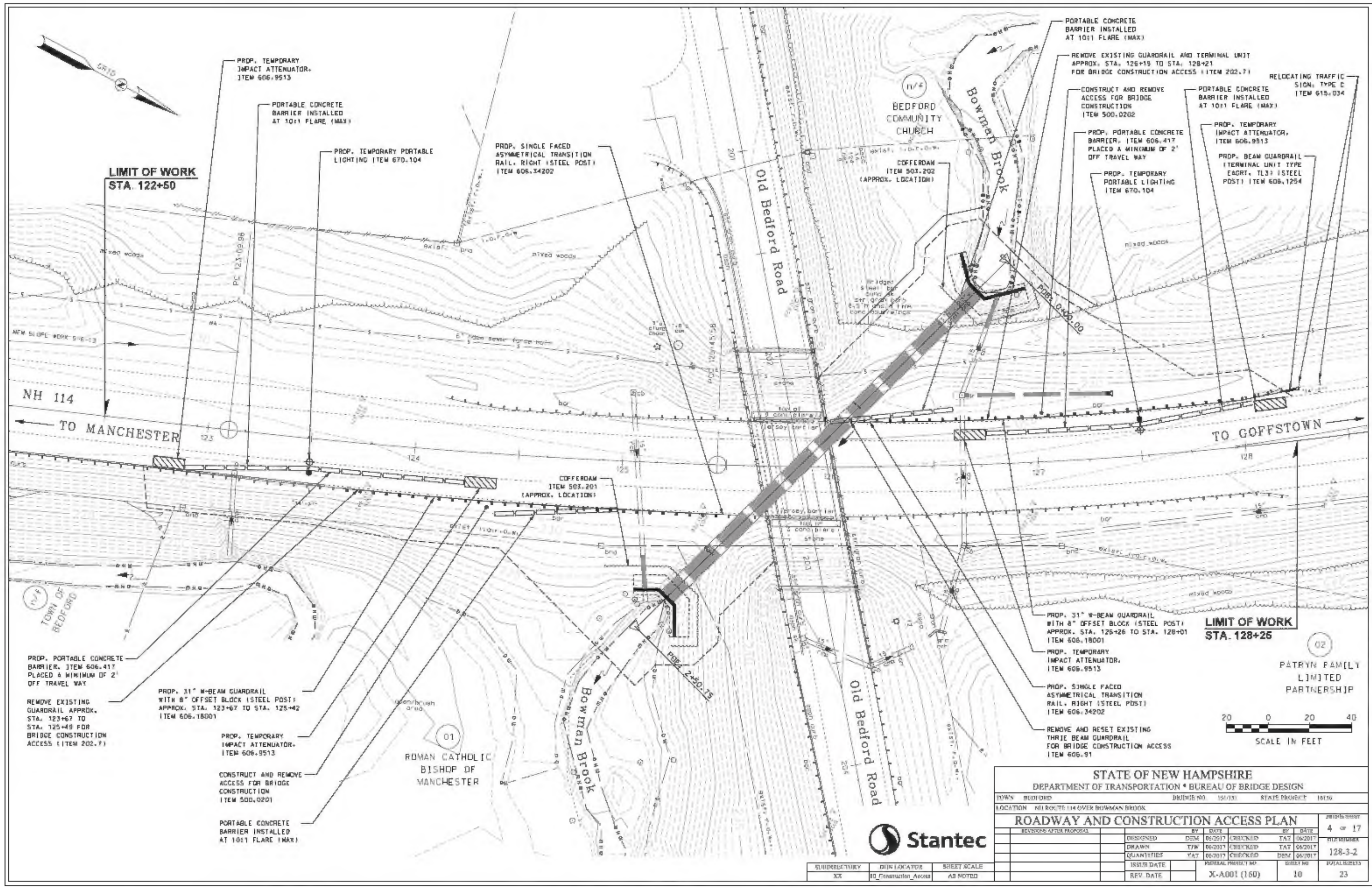


STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION • BUREAU OF BRIDGE DESIGN									
TOWN: BEDFORD		BRIDGE NO.: 151/152		STATE PROJECT: 16136					
LOCATION: NH ROUTE 114 OVER BOWMAN BROOK									
SITE PLAN									
DESIGNED		BY: DATE		CHECKED		TAT: DATE		3 OF 17	
DRAWN		TJM: 05/2017		CHECKED		TAT: 06/2017		128-3-2	
QUANTITIES		TAT: 05/2017		CHECKED		TJM: 06/2017		TOTAL SHEETS: 23	
ISSUE DATE		PERSONAL PROJECT NO.		SHEET NO.					
REV. DATE		X-A001 (160)		9					



SUBMITTAL	DESIGNATOR	SHEET SCALE
XX	05 Site Plan	AS NOTED





STATE OF NEW HAMPSHIRE											
DEPARTMENT OF TRANSPORTATION • BUREAU OF BRIDGE DESIGN											
TOWN		BEDFORD		BRIDGE NO.		154/13		STATE PROJECT		10130	
LOCATION NH ROUTE 114 OVER BOWMAN BROOK											
ROADWAY AND CONSTRUCTION ACCESS PLAN										SHEET NUMBER	
REVISIONS AFTER PROPOSAL				BY		DATE		BY		DATE	
				DESIGNED		DEM		06/2017		4 OF 17	
				DRAWN		TJW		06/2017		SHEET NUMBER	
				QUANTITIES		TAT		06/2017		128-3-2	
				ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.		TOTAL SHEETS	
				REV. DATE		X-A001 (160)		10		23	







## BORING NO. B01

[illegible]

## BORING NO. B02

[illegible]

BORING NO. B02

TEST BORING REPORT				New Hampshire		BORING NO.	B02
STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION MATERIALS & RESEARCH BUREAU GEOTECHNICAL SECTION				DOT		SHEET NO.	OF
PROJECT NAME				BRIDGE NO.		DATE	3/18
DESCRIPTION				N/A		BASELINE	NH Route 104
						ELEVATION (ft.)	250
DEPTH (ft.)	SOIL TYPE	WATER CONTENT (%)	LIQUID LIMIT (PL)	FIELD CLASSIFICATION AND REMARKS			
0				ROAD OUTWASH			
10				<p>From 0 to 10 ft. below road surface soil is very coarse weathered rock fragments. Below 10 ft. to 12 ft. from road surface soil is very hard, massive, weathered, moderately fractured, gray with brown coarse grained (20% to 30% to 40% from road surface) and highly variable in color due to weathering. Below 12 ft. from road surface soil is very hard, massive, weathered, moderately fractured, gray with brown coarse grained (20% to 30% to 40% from road surface) and highly variable in color due to weathering. Below 12 ft. from road surface soil is very hard, massive, weathered, moderately fractured, gray with brown coarse grained (20% to 30% to 40% from road surface) and highly variable in color due to weathering.</p>			
20				Bottom of Excavation 20 ft. below road surface			
40							
60							
80							
100							

### EDITING NOTES

1. FOR BOR NG'S B'D THROUGH B'DG THE MNDOT PERFORMED SUBSURFACE INVEST GAT IONS AT THE SITE IN FEBRUARY 2011. ADD T DNAL BOR NG LOGS AND GEOTECHN CAL INFORMATION AVAILABLE ON LINE ON THE INVT GAT ON TO B'D WEBSITE AT WWW.MN.GOV/DOT IN THE SPEC FIC PROJECT S PROPOSAL PACKAGE. ADD T DNAL BOR NG'S FROM THE 1964 STATE PROJECT P4988 ARE SHOWN ON B'DG SHEET 9.
2. NORTH NG AND EAST NG COORDINATES REFERENCE THE NORTH AMER CAN DATUM 1983. 1986 AND ELEVATIONS REFERENCE THE NAT DNAL GEODETIC VEY CAL DATUM OF 1929.
3. SUBSURFACE COND T IONS ARE KNOWN ONLY AT THE EXPLORAT ON LOCAT IONS AND COULD VARY AT OTHER LOCAT IONS ON THE SITE.
4. GROUNDWATER LEVELS SHOWN ON THE LOGS REPRESENT THE COND T IONS AT THE TIMES OF MEASUREMENT AND COULD CHANGE IN RESPONSE TO SEVERAL FACTORS INCLUDING PRECIPITATION AND TERRAIN ALTERATION.



BUILDING PLAN  
SCALE: 1/8" = 1'-0"



SUBMITTER'S KEY	JOIN NUMBER	SHEET SCALE	ISSUE DATE	PRIORAL PHOTO NO.	SCALE NO.	TOTAL SHEETS
XI	2 Boring Log D1	A8 MOTTED	BVY DATE	X ADD. (60)	12	23



## BORING NO. B03

[illegible]

## BORING NO. B04

[illegible]

STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION • BUREAU OF BRIDGE DESIGN									
PROJECT NUMBER		BRIDGE NO.		SPAN TYPE		DATE			
LOCATION		NO. ROUTE OVER RAILROAD BRIDGE							
BORING LOGS (SHEET 2 OF 4)								BRIDGE NO.	
								7 OF 7	
SECTION AFTER FINISHING		BY		DATE		BY		DATE	
		DESIGNED		CHECKED		TAS		6-20-11	
		DRAWN		CHECKED		TAS		6-20-11	
		QUANTITY		CHECKED		TAS		6-20-11	
ISSUE DATE		REVISION		REVISION		REVISION		REVISION	
REV DATE		X ADD ( 60)		13		23		TOTAL SHEETS	



## BORING NO. B05

[illegible]

## BORING NO. B06

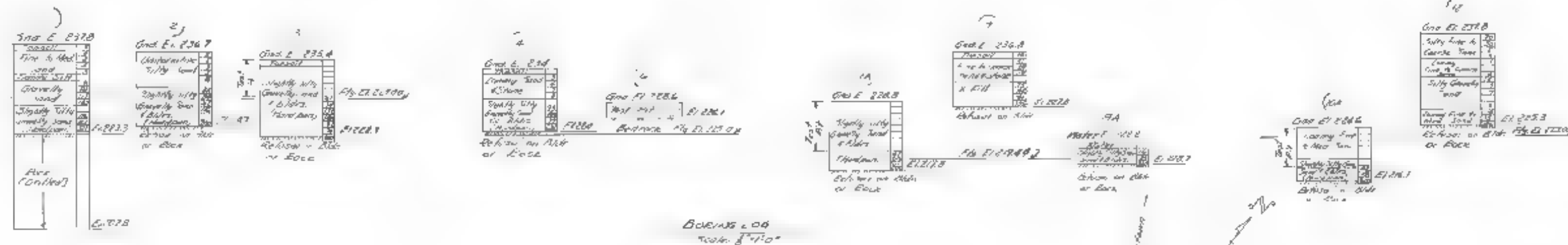
TEST BORING REPORT										BORING NO. 808	
STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION MATERIALS & RESEARCH BUREAU GEOTECHNICAL SECTION										SHEET NO. OF	
PROJECT NAME BEDFORD 16793										BRIDGE NO. N/A	
DESCRIPTION Cuyler Replacement NH 4										S.A. OF	
GEOGRAPHY										BASELINE	
EQUIPMENT										FI ELEVATION IN	
SAMPLER										START/END	
CASING										DRILLER	
CORE										INSTR. FOR	
SOIL LOG										CLASS. I.R.	
LOG. 15' - 16' (10' 10' 11' 12' 13' 14' 15' 16')										EAST/WEST (N)	
FIELD CLASSIFICATION AND REMARKS											
<p>1. 0' - 1' 1/2' (1' 1/2' 1' 3/4' 2' 1/4' 2' 3/4' 3' 1/4' 3' 3/4' 4' 1/4' 4' 3/4' 5' 1/4' 5' 3/4' 6' 1/4' 6' 3/4' 7' 1/4' 7' 3/4' 8' 1/4' 8' 3/4' 9' 1/4' 9' 3/4' 10' 1/4' 10' 3/4' 11' 1/4' 11' 3/4' 12' 1/4' 12' 3/4' 13' 1/4' 13' 3/4' 14' 1/4' 14' 3/4' 15' 1/4' 15' 3/4' 16' 1/4' 16' 3/4' 17' 1/4' 17' 3/4' 18' 1/4' 18' 3/4' 19' 1/4' 19' 3/4' 20' 1/4' 20' 3/4' 21' 1/4' 21' 3/4' 22' 1/4' 22' 3/4' 23' 1/4' 23' 3/4' 24' 1/4' 24' 3/4' 25' 1/4' 25' 3/4' 26' 1/4' 26' 3/4' 27' 1/4' 27' 3/4' 28' 1/4' 28' 3/4' 29' 1/4' 29' 3/4' 30' 1/4' 30' 3/4' 31' 1/4' 31' 3/4' 32' 1/4' 32' 3/4' 33' 1/4' 33' 3/4' 34' 1/4' 34' 3/4' 35' 1/4' 35' 3/4' 36' 1/4' 36' 3/4' 37' 1/4' 37' 3/4' 38' 1/4' 38' 3/4' 39' 1/4' 39' 3/4' 40' 1/4' 40' 3/4' 41' 1/4' 41' 3/4' 42' 1/4' 42' 3/4' 43' 1/4' 43' 3/4' 44' 1/4' 44' 3/4' 45' 1/4' 45' 3/4' 46' 1/4' 46' 3/4' 47' 1/4' 47' 3/4' 48' 1/4' 48' 3/4' 49' 1/4' 49' 3/4' 50' 1/4' 50' 3/4' 51' 1/4' 51' 3/4' 52' 1/4' 52' 3/4' 53' 1/4' 53' 3/4' 54' 1/4' 54' 3/4' 55' 1/4' 55' 3/4' 56' 1/4' 56' 3/4' 57' 1/4' 57' 3/4' 58' 1/4' 58' 3/4' 59' 1/4' 59' 3/4' 60' 1/4' 60' 3/4' 61' 1/4' 61' 3/4' 62' 1/4' 62' 3/4' 63' 1/4' 63' 3/4' 64' 1/4' 64' 3/4' 65' 1/4' 65' 3/4' 66' 1/4' 66' 3/4' 67' 1/4' 67' 3/4' 68' 1/4' 68' 3/4' 69' 1/4' 69' 3/4' 70' 1/4' 70' 3/4' 71' 1/4' 71' 3/4' 72' 1/4' 72' 3/4' 73' 1/4' 73' 3/4' 74' 1/4' 74' 3/4' 75' 1/4' 75' 3/4' 76' 1/4' 76' 3/4' 77' 1/4' 77' 3/4' 78' 1/4' 78' 3/4' 79' 1/4' 79' 3/4' 80' 1/4' 80' 3/4' 81' 1/4' 81' 3/4' 82' 1/4' 82' 3/4' 83' 1/4' 83' 3/4' 84' 1/4' 84' 3/4' 85' 1/4' 85' 3/4' 86' 1/4' 86' 3/4' 87' 1/4' 87' 3/4' 88' 1/4' 88' 3/4' 89' 1/4' 89' 3/4' 90' 1/4' 90' 3/4' 91' 1/4' 91' 3/4' 92' 1/4' 92' 3/4' 93' 1/4' 93' 3/4' 94' 1/4' 94' 3/4' 95' 1/4' 95' 3/4' 96' 1/4' 96' 3/4' 97' 1/4' 97' 3/4' 98' 1/4' 98' 3/4' 99' 1/4' 99' 3/4' 100' 1/4' 100' 3/4' 101' 1/4' 101' 3/4' 102' 1/4' 102' 3/4' 103' 1/4' 103' 3/4' 104' 1/4' 104' 3/4' 105' 1/4' 105' 3/4' 106' 1/4' 106' 3/4' 107' 1/4' 107' 3/4' 108' 1/4' 108' 3/4' 109' 1/4' 109' 3/4' 110' 1/4' 110' 3/4' 111' 1/4' 111' 3/4' 112' 1/4' 112' 3/4' 113' 1/4' 113' 3/4' 114' 1/4' 114' 3/4' 115' 1/4' 115' 3/4' 116' 1/4' 116' 3/4' 117' 1/4' 117' 3/4' 118' 1/4' 118' 3/4' 119' 1/4' 119' 3/4' 120' 1/4' 120' 3/4' 121' 1/4' 121' 3/4' 122' 1/4' 122' 3/4' 123' 1/4' 123' 3/4' 124' 1/4' 124' 3/4' 125' 1/4' 125' 3/4' 126' 1/4' 126' 3/4' 127' 1/4' 127' 3/4' 128' 1/4' 128' 3/4' 129' 1/4' 129' 3/4' 130' 1/4' 130' 3/4' 131' 1/4' 131' 3/4' 132' 1/4' 132' 3/4' 133' 1/4' 133' 3/4' 134' 1/4' 134' 3/4' 135' 1/4' 135' 3/4' 136' 1/4' 136' 3/4' 137' 1/4' 137' 3/4' 138' 1/4' 138' 3/4' 139' 1/4' 139' 3/4' 140' 1/4' 140' 3/4' 141' 1/4' 141' 3/4' 142' 1/4' 142' 3/4' 143' 1/4' 143' 3/4' 144' 1/4' 144' 3/4' 145' 1/4' 145' 3/4' 146' 1/4' 146' 3/4' 147' 1/4' 147' 3/4' 148' 1/4' 148' 3/4' 149' 1/4' 149' 3/4' 150' 1/4' 150' 3/4' 151' 1/4' 151' 3/4' 152' 1/4' 152' 3/4' 153' 1/4' 153' 3/4' 154' 1/4' 154' 3/4' 155' 1/4' 155' 3/4' 156' 1/4' 156' 3/4' 157' 1/4' 157' 3/4' 158' 1/4' 158' 3/4' 159' 1/4' 159' 3/4' 160' 1/4' 160' 3/4' 161' 1/4' 161' 3/4' 162' 1/4' 162' 3/4' 163' 1/4' 163' 3/4' 164' 1/4' 164' 3/4' 165' 1/4' 165' 3/4' 166' 1/4' 166' 3/4' 167' 1/4' 167' 3/4' 168' 1/4' 168' 3/4' 169' 1/4' 169' 3/4' 170' 1/4' 170' 3/4' 171' 1/4' 171' 3/4' 172' 1/4' 172' 3/4' 173' 1/4' 173' 3/4' 174' 1/4' 174' 3/4' 175' 1/4' 175' 3/4' 176' 1/4' 176' 3/4' 177' 1/4' 177' 3/4' 178' 1/4' 178' 3/4' 179' 1/4' 179' 3/4' 180' 1/4' 180' 3/4' 181' 1/4' 181' 3/4' 182' 1/4' 182' 3/4' 183' 1/4' 183' 3/4' 184' 1/4' 184' 3/4' 185' 1/4' 185' 3/4' 186' 1/4' 186' 3/4' 187' 1/4' 187' 3/4' 188' 1/4' 188' 3/4' 189' 1/4' </p>											

STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION • BUREAU OF BRIDGE DESIGN									
PROJECT NUMBER		BRIDGE NO.		SPAN TYPE		DATE			
00000		1000		S.F.		10/10			
LOCATION: N. Rte. 100, Dover, New Hampshire									
BORING LOGS (SHEET 3 OF 4)								BOTH SIDES	
NO. OF BORINGS		BY		DATE		BY		DATE	
8		J. W. B.		10/10		J. W. B.		10/10	
1		2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	
16		17		18		19		20	
21		22		23		24		25	
26		27		28		29		30	
31		32		33		34		35	
36		37		38		39		40	
41		42		43		44		45	
46		47		48		49		50	
51		52		53		54		55	
56		57		58		59		60	
61		62		63		64		65	
66		67		68		69		70	
71		72		73		74		75	
76		77		78		79		80	
81		82		83		84		85	
86		87		88		89		90	
91		92		93		94		95	
96		97		98		99		100	
101		102		103		104		105	
106		107		108		109		110	
111		112		113		114		115	
116		117		118		119		120	
121		122		123		124		125	
126		127		128		129		130	
131		132		133		134		135	
136		137		138		139		140	
141		142		143		144		145	
146		147		148		149		150	
151		152		153		154		155	
156		157		158		159		160	
161		162		163		164		165	
166		167		168		169		170	
171		172		173		174		175	
176		177		178		179		180	
181		182		183		184		185	
186		187		188		189		190	
191		192		193		194		195	
196		197		198		199		200	
201		202		203		204		205	
206		207		208		209		210	
211		212		213		214		215	
216		217		218		219		220	
221		222		223		224		225	
226		227		228		229		230	
231		232		233		234		235	
236		237		238		239		240	
241		242		243		244		245	
246		247		248		249		250	
251		252		253		254		255	
256		257		258		259		260	
261		262		263		264		265	
266		267		268		269		270	
271		272		273		274		275	
276		277		278		279		280	
281		282		283		284		285	





FILE NO.	DATE	BY	CHKD	APPD	DATE
11	1/28/92	40	209		



**NOTES:**  
 Borings indicated thus were made by U.S.D. #14 H. in April, 1964. Figures in the right hand column indicate the number of blows required to drive a 3" x 30" 4" no. one foot casing 180 pound weight falling 30 inches. Borings are for design purposes and thus could not be used for construction. Only one do not necessarily indicate materials like encountered in the construction. Boring symbols may be explained at the office of the Bridge Engineer, State Office Building, 65 Jordan Road, Concord, N.H.

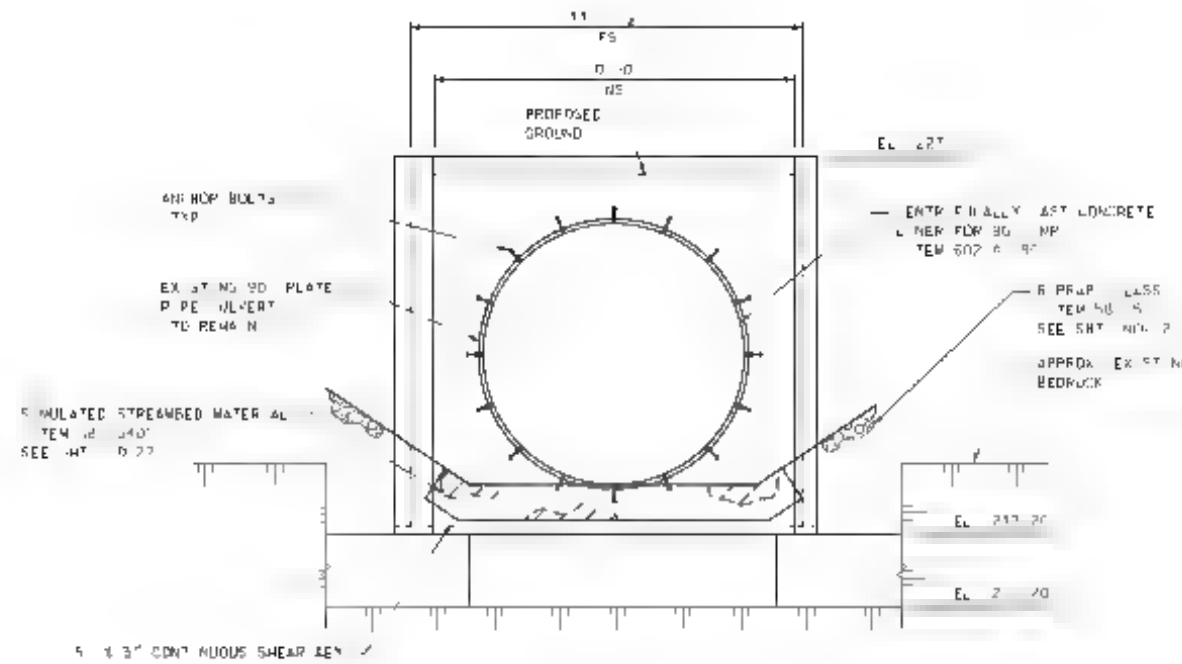
**BORING LAYOUT**  
 Scale 20'

STATE OF NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS BRIDGE DESIGN DIVISION			
TOWN: BEDFORD (BEDFORD 404 TOWN)		PROJECT NO: 15/152	
FEDERAL PROJECT: 15/152		DATE: 12/29/82	
LOCATION: Old Bedford Road over Bedford Brook, 0.50 mile to the intersection of Bedford Rd. and 101.			
BORINGS, BORING LAYOUT & PROFILE			
BY: J.E. L.	DATE: 1/28/92	CHECKED: M.A.	DATE: 2/18/92
DESIGNED: J.E. L.	DATE: 1/28/92	RECORD: M.A.	DATE: 2/18/92
TRACED: J.E. L.	DATE: 1/28/92	QUANTITY: 1	DATE: 2/18/92
REVIEWED BY: J.E. L.		DATE: 2/18/92	SHEET NO: 40
PROJECT NO: 15/152		DATE: 2/18/92	SHEET NO: 209

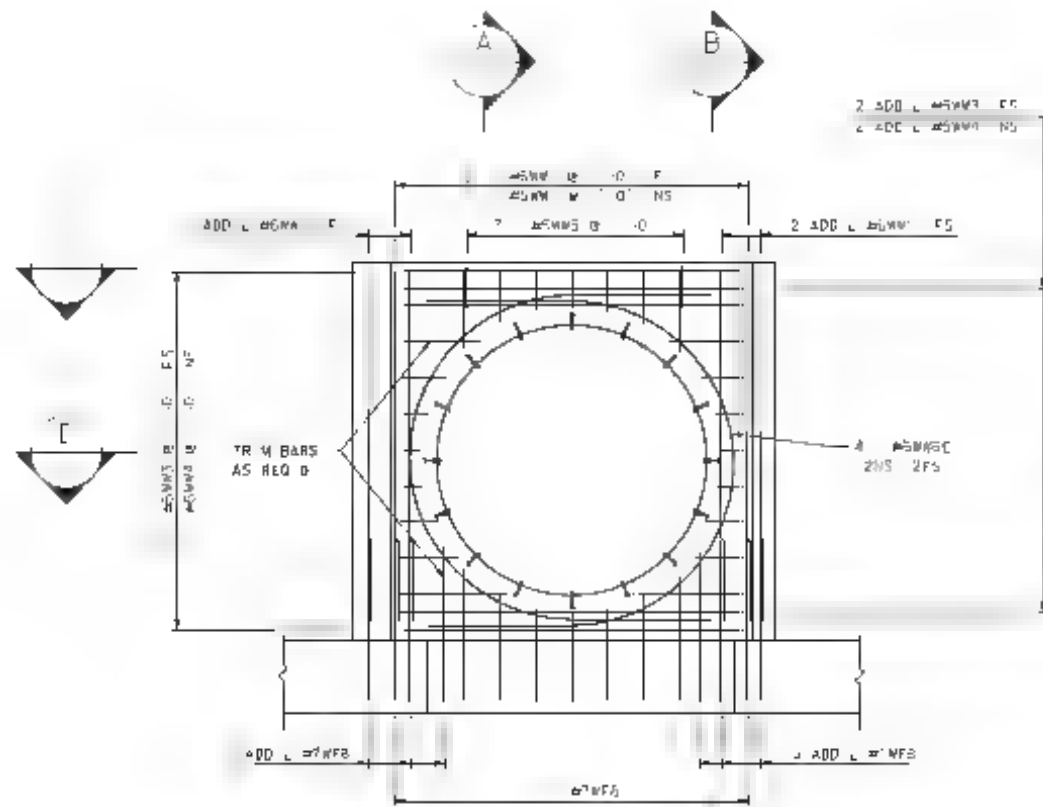


STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION - AREA OF BRIDGE DESIGN			
TOWN: BEDFORD	BRIDGE NO: 15/152	DATE: 1/28/92	BY: J.E. L.
LOCATION: Old Bedford Road over Bedford Brook			
BORING LOGS (SHEET 4 OF 4)			
REVISIONS AFTER RECORDING	BY: J.E. L.	DATE: 1/28/92	BY: J.E. L.
DESIGNED: J.E. L.	DATE: 1/28/92	CHECKED: M.A.	DATE: 2/18/92
TRACED: J.E. L.	DATE: 1/28/92	RECORD: M.A.	DATE: 2/18/92
QUANTITY: 1	DATE: 2/18/92	PROJECT NO: 15/152	DATE: 2/18/92
ISSUED DATE: 1/28/92	PROJECT NO: 15/152	DATE: 2/18/92	SHEET NO: 40
REV. DATE: 1/28/92	PROJECT NO: 15/152	DATE: 2/18/92	SHEET NO: 209

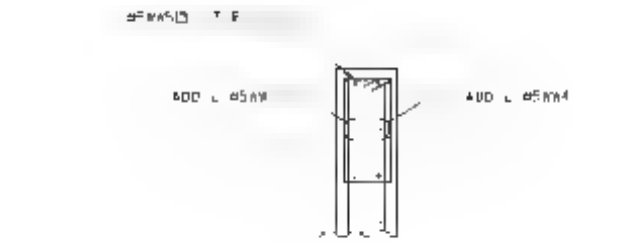




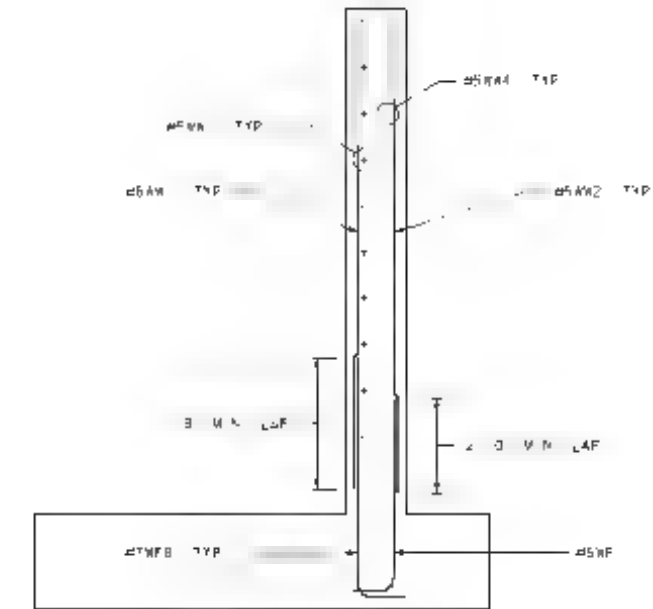
INLET HEADWALL MASONRY



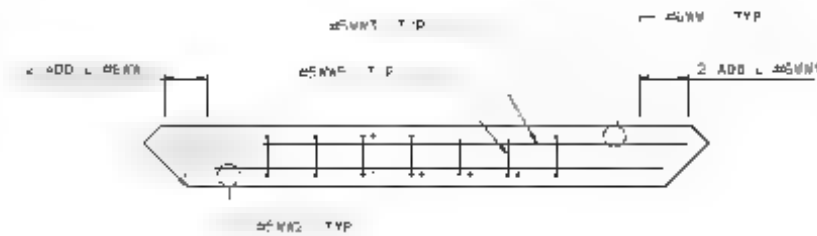
INLET HEADWALL REINFORCEMENT



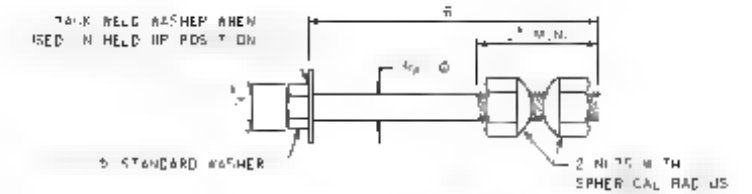
SECTION A



SECTION B

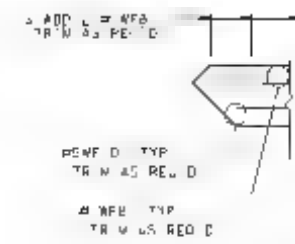


SECTION C

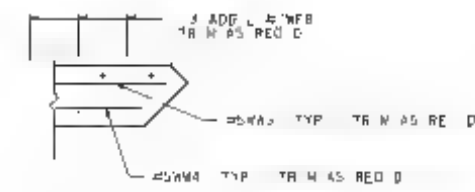


ANCHOR BOLT DETAIL

- NOTE: 1. ANCHOR BOLTS SHALL BE SUBSIDIARY TO TEM 502.2.
2. ALL ANCHOR BOLT SHALL BE GALVANIZED STEEL MEETING THE REQUIREMENTS OF ASTM A153 OR A193 WITH A MINIMUM OF FOUR CORROSION RESISTANT COATINGS INCLUDING THE NUTS AND WASHERS.
- ANCHOR BOLTS SHALL BE CAST INTO CONCRETE HEADWALLS SPACED AS SHOWN IN REQ'D TO EACH HEADWALL.
4. TYPICAL TO BOTH INLET AND OUTLET HEADWALLS.



SECTION D



SECTION E

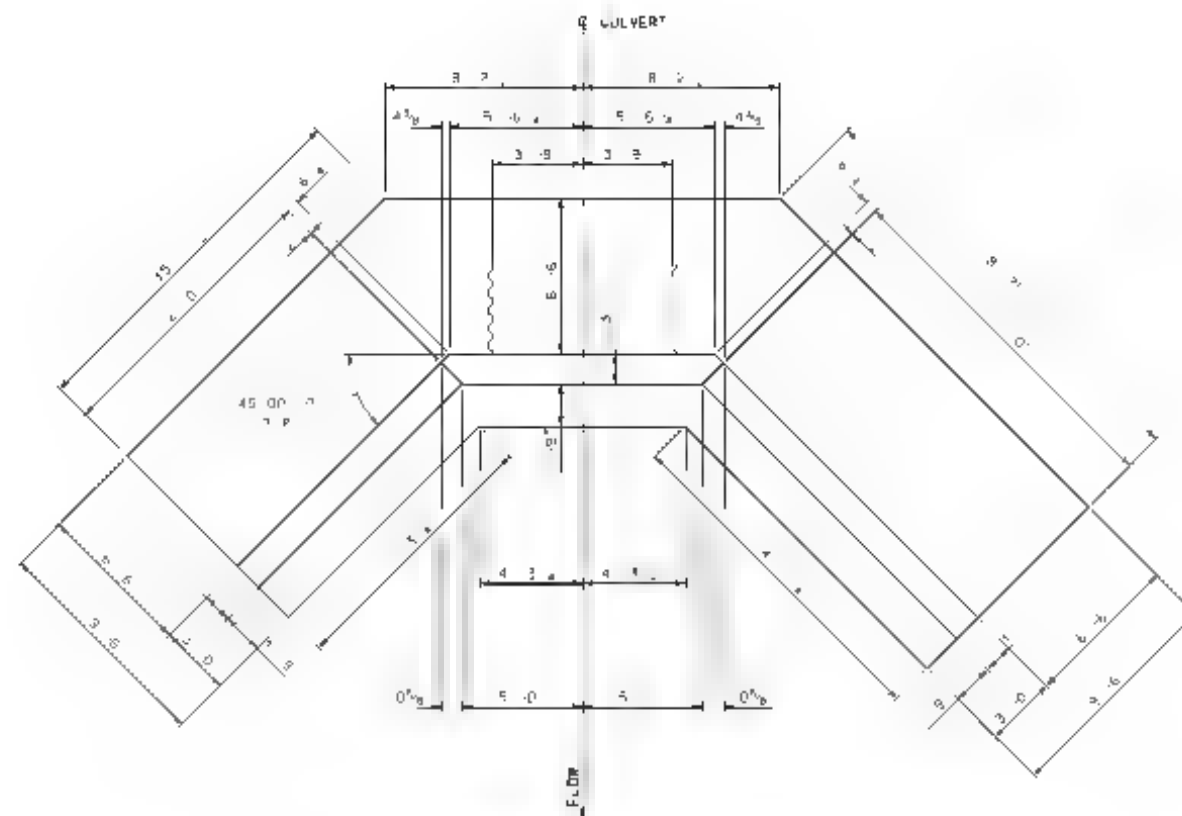


STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE									
TOWN	BUILDING	DATE	BY	DATE	BY	DATE	BY	DATE	BY
LOCATION	NO. 101	NO. 101	NO. 101	NO. 101	NO. 101	NO. 101	NO. 101	NO. 101	NO. 101
INLET HEADWALL DETAILS									
DESIGNED	BY	DATE	DESIGNED	BY	DATE	DESIGNED	BY	DATE	DESIGNED
DRAWN	BY	DATE	DRAWN	BY	DATE	DRAWN	BY	DATE	DRAWN
QUANTITY	BY	DATE	QUANTITY	BY	DATE	QUANTITY	BY	DATE	QUANTITY
ISSUE DATE	BY	DATE	ISSUE DATE	BY	DATE	ISSUE DATE	BY	DATE	ISSUE DATE
REV	DATE	BY	REV	DATE	BY	REV	DATE	BY	REV
1	10/1/20	ABC	1	10/1/20	ABC	1	10/1/20	ABC	1
2	10/1/20	ABC	2	10/1/20	ABC	2	10/1/20	ABC	2
3	10/1/20	ABC	3	10/1/20	ABC	3	10/1/20	ABC	3
4	10/1/20	ABC	4	10/1/20	ABC	4	10/1/20	ABC	4
5	10/1/20	ABC	5	10/1/20	ABC	5	10/1/20	ABC	5
6	10/1/20	ABC	6	10/1/20	ABC	6	10/1/20	ABC	6
7	10/1/20	ABC	7	10/1/20	ABC	7	10/1/20	ABC	7
8	10/1/20	ABC	8	10/1/20	ABC	8	10/1/20	ABC	8
9	10/1/20	ABC	9	10/1/20	ABC	9	10/1/20	ABC	9
10	10/1/20	ABC	10	10/1/20	ABC	10	10/1/20	ABC	10
11	10/1/20	ABC	11	10/1/20	ABC	11	10/1/20	ABC	11
12	10/1/20	ABC	12	10/1/20	ABC	12	10/1/20	ABC	12
13	10/1/20	ABC	13	10/1/20	ABC	13	10/1/20	ABC	13
14	10/1/20	ABC	14	10/1/20	ABC	14	10/1/20	ABC	14
15	10/1/20	ABC	15	10/1/20	ABC	15	10/1/20	ABC	15
16	10/1/20	ABC	16	10/1/20	ABC	16	10/1/20	ABC	16
17	10/1/20	ABC	17	10/1/20	ABC	17	10/1/20	ABC	17
18	10/1/20	ABC	18	10/1/20	ABC	18	10/1/20	ABC	18
19	10/1/20	ABC	19	10/1/20	ABC	19	10/1/20	ABC	19
20	10/1/20	ABC	20	10/1/20	ABC	20	10/1/20	ABC	20
21	10/1/20	ABC	21	10/1/20	ABC	21	10/1/20	ABC	21
22	10/1/20	ABC	22	10/1/20	ABC	22	10/1/20	ABC	22
23	10/1/20	ABC	23	10/1/20	ABC	23	10/1/20	ABC	23
24	10/1/20	ABC	24	10/1/20	ABC	24	10/1/20	ABC	24
25	10/1/20	ABC	25	10/1/20	ABC	25	10/1/20	ABC	25
26	10/1/20	ABC	26	10/1/20	ABC	26	10/1/20	ABC	26
27	10/1/20	ABC	27	10/1/20	ABC	27	10/1/20	ABC	27
28	10/1/20	ABC	28	10/1/20	ABC	28	10/1/20	ABC	28
29	10/1/20	ABC	29	10/1/20	ABC	29	10/1/20	ABC	29
30	10/1/20	ABC	30	10/1/20	ABC	30	10/1/20	ABC	30
31	10/1/20	ABC	31	10/1/20	ABC	31	10/1/20	ABC	31
32	10/1/20	ABC	32	10/1/20	ABC	32	10/1/20	ABC	32
33	10/1/20	ABC	33	10/1/20	ABC	33	10/1/20	ABC	33
34	10/1/20	ABC	34	10/1/20	ABC	34	10/1/20	ABC	34
35	10/1/20	ABC	35	10/1/20	ABC	35	10/1/20	ABC	35
36	10/1/20	ABC	36	10/1/20	ABC	36	10/1/20	ABC	36
37	10/1/20	ABC	37	10/1/20	ABC	37	10/1/20	ABC	37
38	10/1/20	ABC	38	10/1/20	ABC	38	10/1/20	ABC	38
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53	10/1/20	ABC	53	10/1/20	ABC	53	10/1/20	ABC	53
54	10/1/20	ABC	54	10/1/20	ABC	54	10/1/20	ABC	54
55	10/1/20	ABC	55	10/1/20	ABC	55	10/1/20	ABC	55
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57	10/1/20	ABC	57	10/1/20	ABC	57	10/1/20	ABC	57
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83	10/1/20	ABC	83	10/1/20	ABC	83	10/1/20	ABC	83
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98	10/1/20	ABC	98	10/1/20	ABC	98	10/1/20	ABC	98
99	10/1/20	ABC	99	10/1/20	ABC	99	10/1/20	ABC	99
100	10/1/20	ABC	100	10/1/20	ABC	100	10/1/20	ABC	100

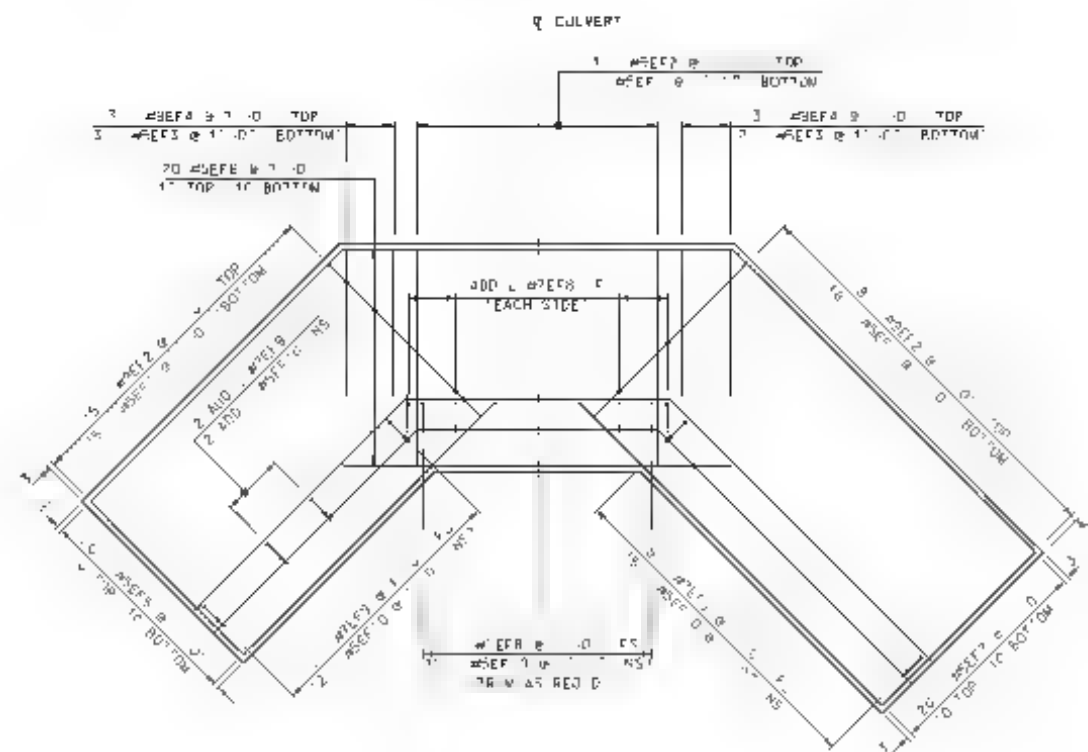




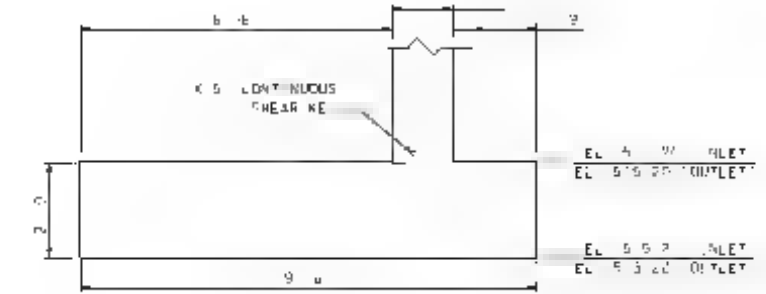
STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION & BUREAU OF BRIDGE DESIGN									
DRAWN BY		DATE		SCALE		SHEET NO.		TOTAL SHEETS	
J. W. BROWN		10/1/78		1/4" = 1'-0"		1		1	
LOCATION: ROUTE 14 OVER BUSHMAN BRIDGE									
INLET WINGWALL DETAILS									
REVISIONS AFTER PROPOSAL				BY	DATE	BY	DATE	PROJECT NO.	
				DESIGNED	10/5	10/1/78	DESIGNED	10/1/78	128 3-2
				DRAWN	10/5	10/1/78	DRAWN	10/1/78	
				QUANTITIES	10/5	10/1/78	QUANTITIES	10/1/78	
REVISION DATE				REVISION NO.			TOTAL SHEETS		
REV. DATE				REV. NO.			TOTAL SHEETS		
				X 100 (1" = 50')			23		



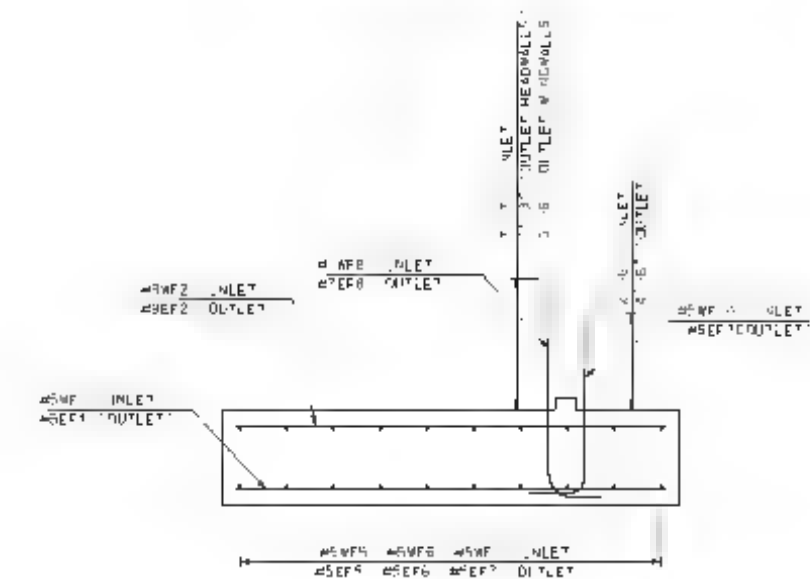
OUTLET FOOTING MASONRY  
A.E. =



OUTLET FOOTING REINFORCEMENT  
A.E. =



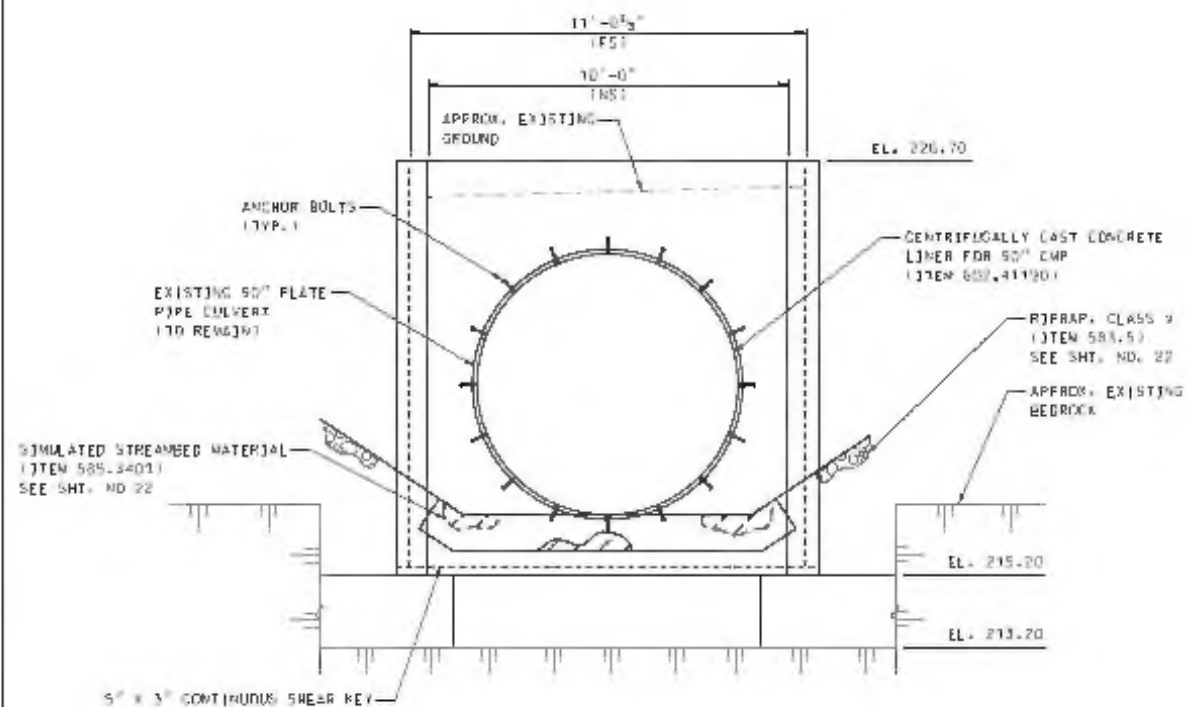
TYPICAL FOOTING SECTION  
A.E. =



TYPICAL FOOTING REINFORCEMENT  
A.E. =

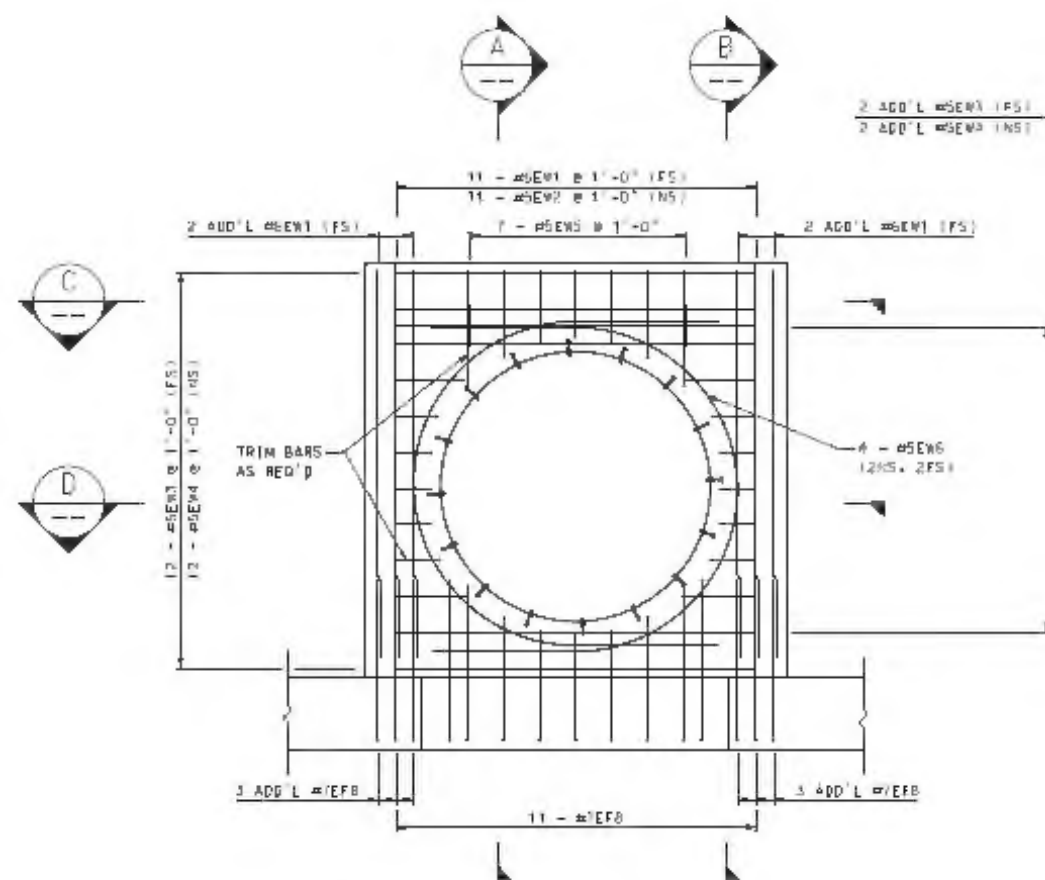
STATE OF NEW HAMPSHIRE															
DEPARTMENT OF TRANSPORTATION & BUILDING DESIGN															
PROJECT NO.		2019-01		DATE		10/1/2019		BY		DESIGNER					
LOCATION										NEW HAMPSHIRE HIGHWAY 101, RICHMOND, NH					
OUTLET FOOTING DETAILS										PROJECT NO.					
DESIGNED BY				DATE		10/1/2019				BY		DESIGNER			
DRAWN BY				DATE		10/1/2019				BY				DESIGNER	
CHECKED BY				DATE		10/1/2019				BY				DESIGNER	
ISSUED BY				DATE		10/1/2019				BY				DESIGNER	
REVISIONS				NO REVISIONS				TOTAL SHEETS				23			
SCALE				AS SHOWN				TOTAL SHEETS				23			





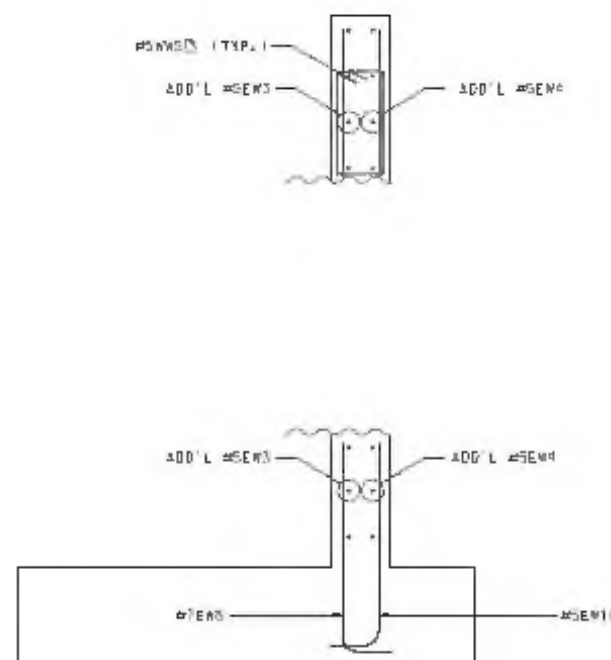
OUTLET HEADWALL MASONRY

SCALE: 3/8" = 1'-0"



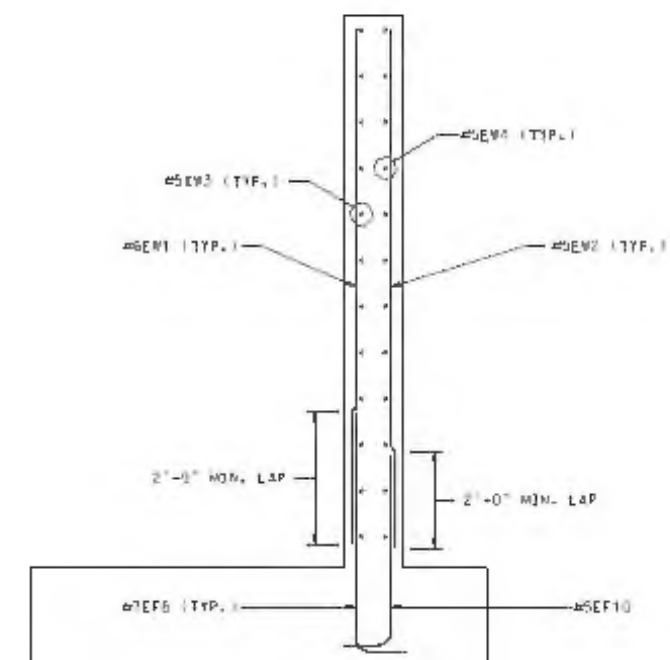
OUTLET HEADWALL REINFORCEMENT

SCALE: 3/8" = 1'-0"



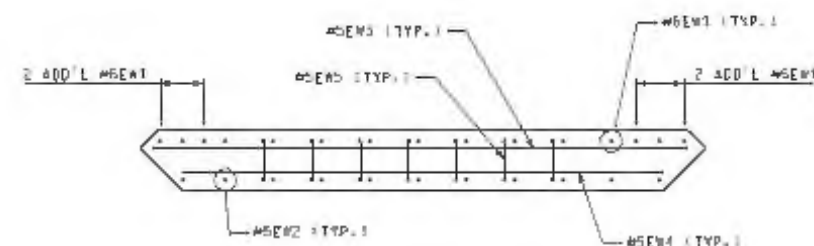
A SECTION

SCALE: 1/2" = 1'-0"



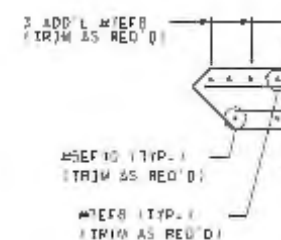
B SECTION

SCALE: 1/2" = 1'-0"



C SECTION

SCALE: 1/2" = 1'-0"



D SECTION

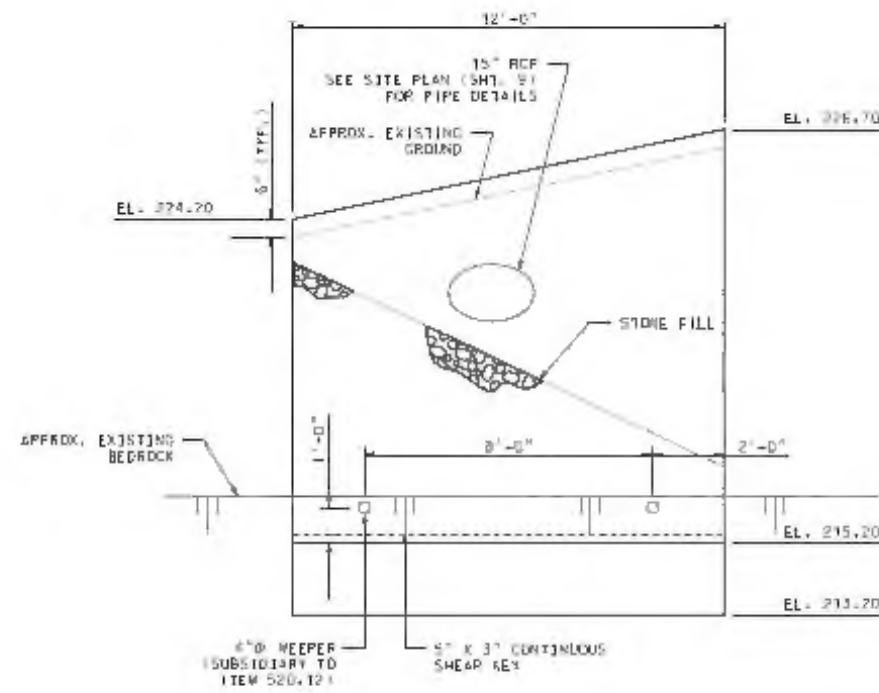
SCALE: 1/2" = 1'-0"



STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION • BUREAU OF BRIDGE DESIGN									
D/W/N		SUB/DWG		BRIDGE NO.		SP/FS		STATE PROJECT	
10170									
LOCATION NJ ROUTE 114 OVER BOWMAN BRIDGE									
OUTLET HEADWALL DETAILS									
REVISIONS AFTER PROPOSAL				BY	DATE	BY	DATE	14 OF 17	
			DESIGNED	JCS	08/2017	CHECKED	DEM	08/2017	STATE ROUTE
			DRAWN	TJW	08/2017	CHECKED	TAT	08/2017	128-3-2
			QUANTITIES	JCS	08/2017	CHECKED	TAT	08/2017	TOTAL SHEETS
			ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.		
			REV. DATE		X-A001 (160)		20		23

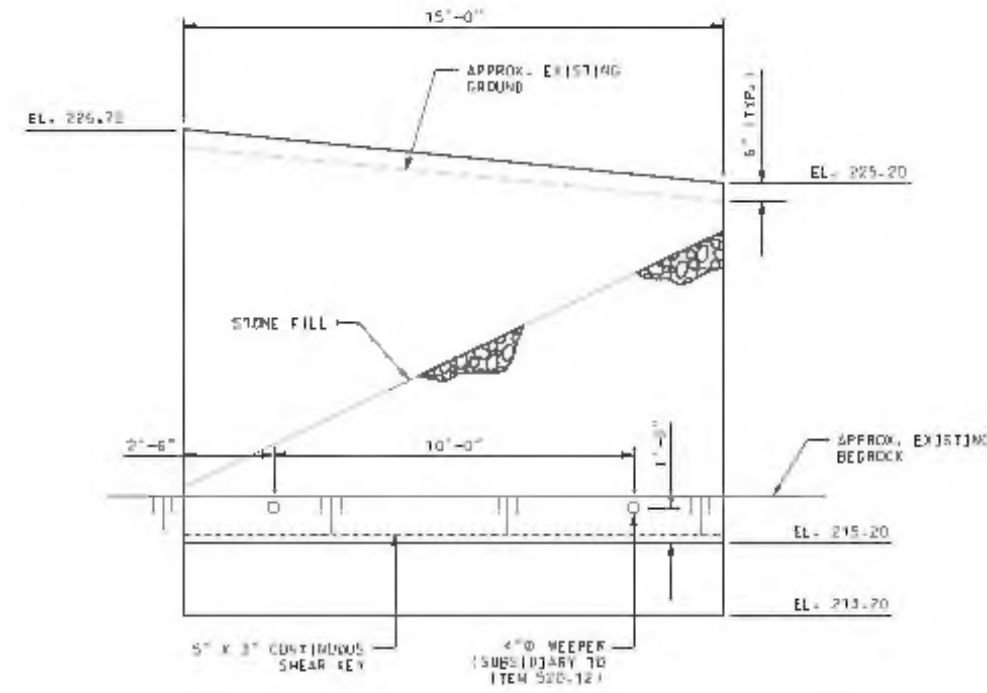
QUANTITY	QTY	SCALE
BROUGHT A	34 Outlet Headwall Detail	AS NOTED





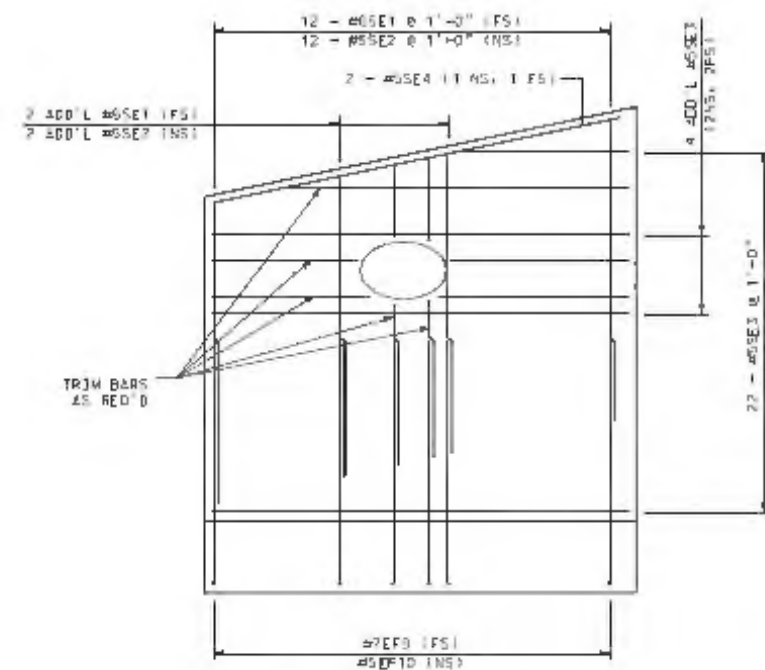
**SOUTHEAST WINGWALL MASONRY**

SCALE: 1/4" = 1'-0"



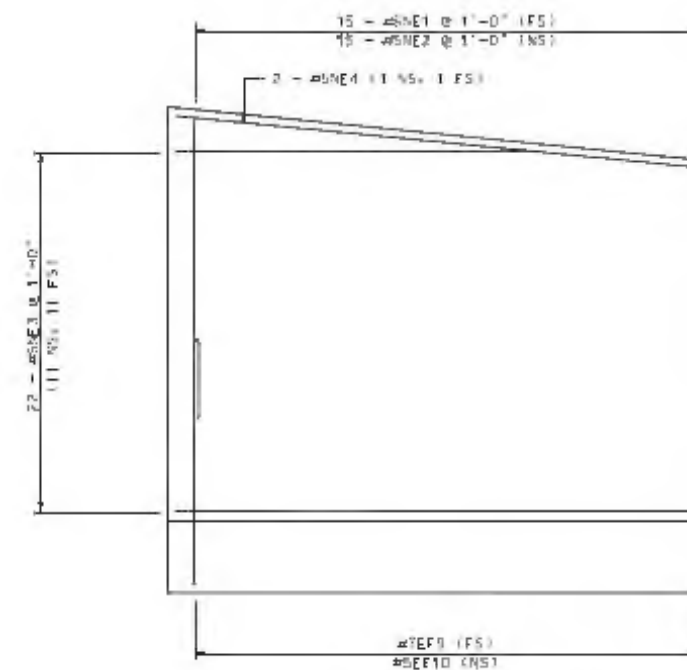
**NORTHEAST WINGWALL MASONRY**

SCALE: 1/4" = 1'-0"



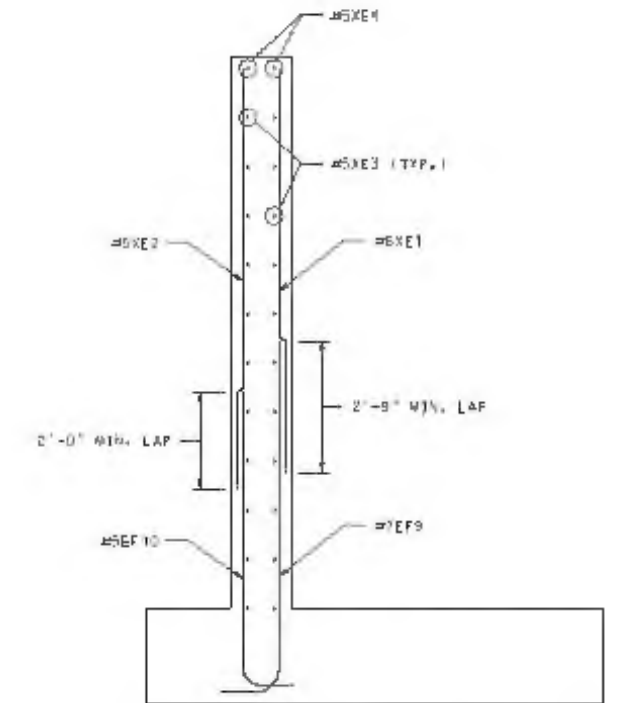
**SOUTHEAST WINGWALL REINFORCEMENT**

SCALE: 1/4" = 1'-0"



**NORTHEAST WINGWALL REINFORCEMENT**

SCALE: 1/4" = 1'-0"



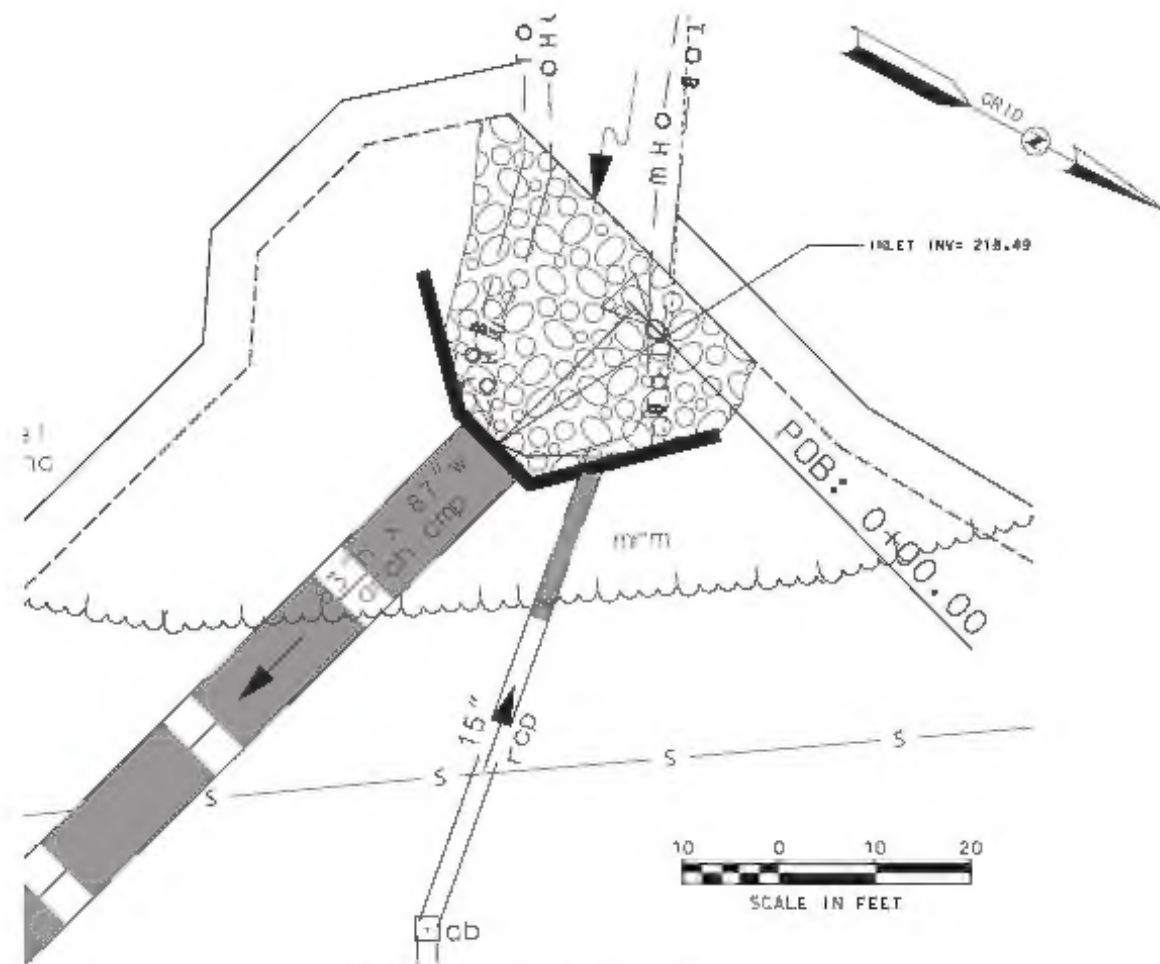
**TYPICAL REINFORCEMENT SECTION**

SCALE: 1/4" = 1'-0"

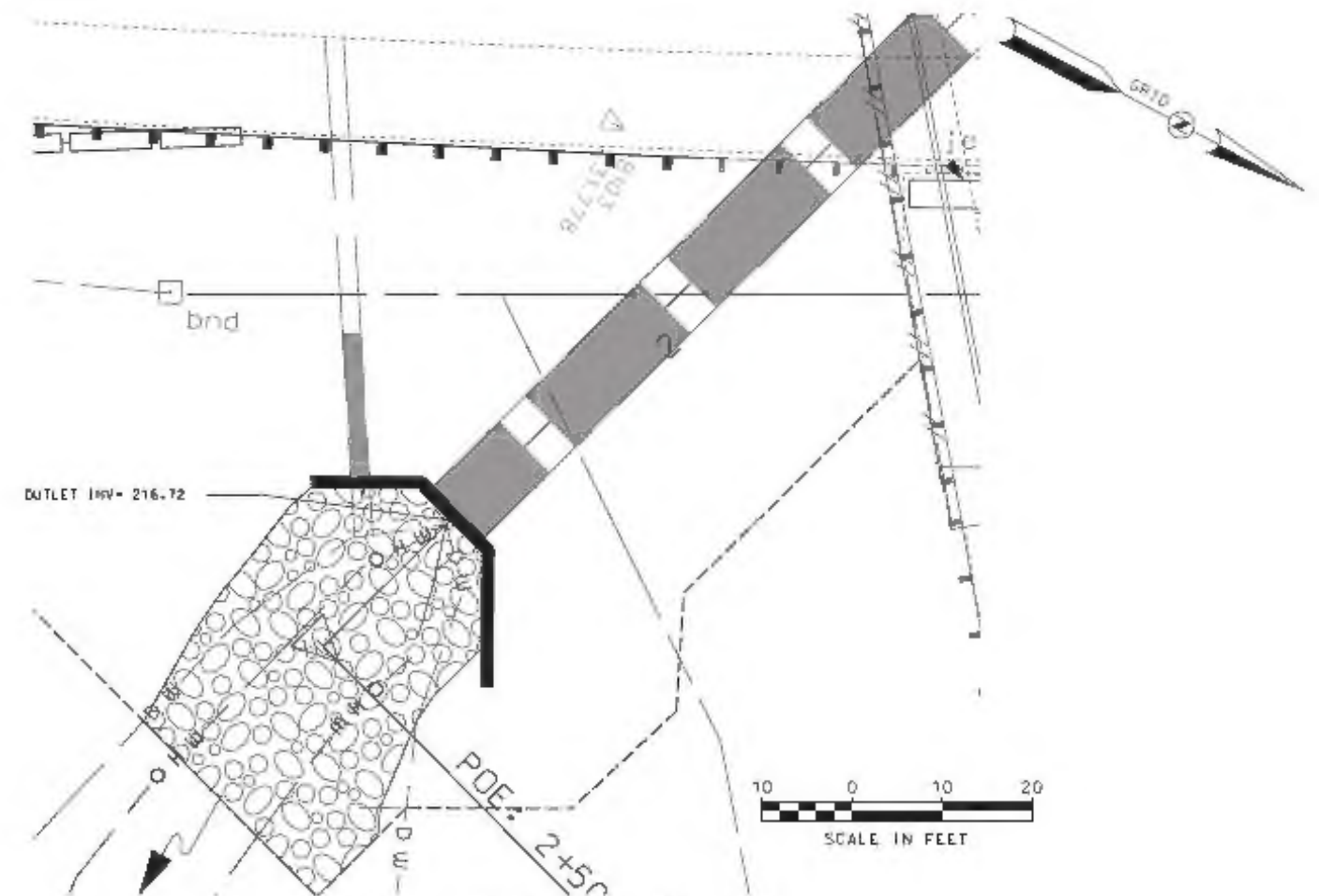


DESIGNED	BY	DATE	CHECKED	BY	DATE
DRAWN	TX	08/2017	CHECKED	TAT	08/2017
QUANTITIES	JCS	08/2017	CHECKED	TAT	08/2017
ISSUE DATE			FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE			X-A001 (160)	21	23

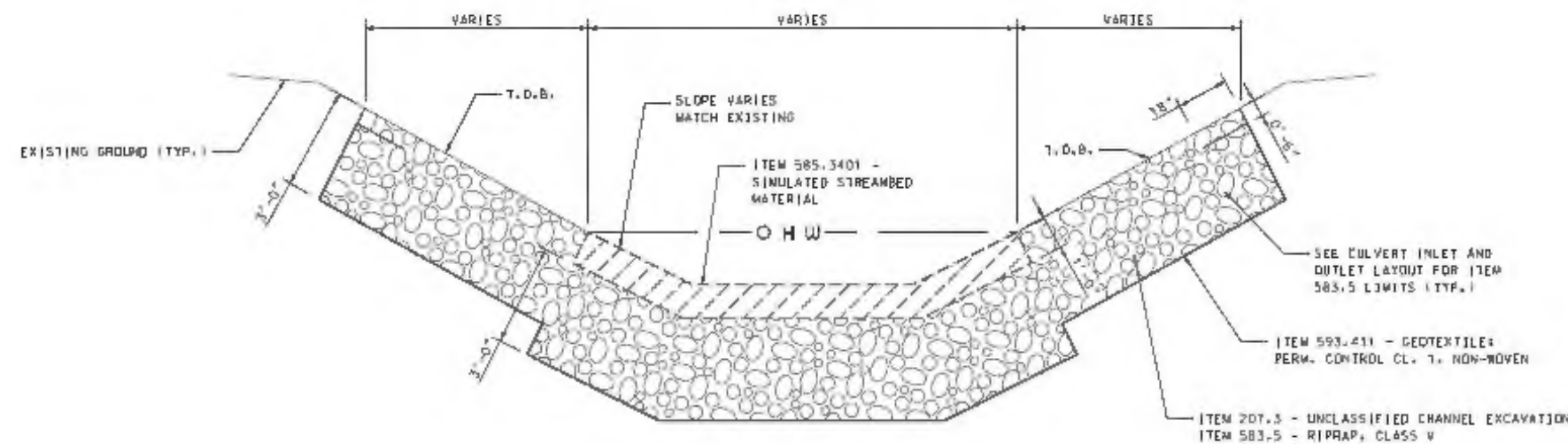
STATE OF NEW HAMPSHIRE					
DEPARTMENT OF TRANSPORTATION • BUREAU OF BRIDGE DESIGN					
PROJECT NO.	BRIDGE NO.	15/13	STATE PROJECT	16136	
LOCATION	NH ROUTE 114 OVER BOWMAN BRIDGE				
OUTLET WINGWALL DETAILS					SHEET NO.
DESIGNED	BY	DATE	CHECKED	BY	DATE
DRAWN	TX	08/2017	CHECKED	TAT	08/2017
QUANTITIES	JCS	08/2017	CHECKED	TAT	08/2017
ISSUE DATE			FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE			X-A001 (160)	21	23



CULVERT INLET LAYOUT



CULVERT OUTLET LAYOUT



CULVERT INLET & OUTLET  
TYPICAL SECTION w/ SIMULATED STREAMBED MATERIAL  
(NOT TO SCALE)



SYMBOL/NOTATION	DESCRIPTION	SHEET SCALE
XX	22_culvert_details	AS NOTED

STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION • BUREAU OF BRIDGE DESIGN									
TOWNS	BUDFORD	BRIDGE NO.		231/131		STATE PROJECT		16116	
LOCATION NH ROUTE 114 OVER BOWMAN BROOK									
CULVERT INLET AND OUTLET DETAILS								SHEET NO.	
SUPERVISION AFTER PROPOSAL		BY		DATE		BY		DATE	
DESIGNED		DSM		06/2017		CHECKED		TAT 06/2017	
DRAWN		T/W		06/2017		CHECKED		TAT 06/2017	
QUANTITIES		TAT		06/2017		CHECKED		DSM 06/2017	
ISSUE DATE		FEDERAL PROJECT NO.				SHEET NO.		TOTAL SHEETS	
REV. DATE		X-A001 (160)				22		23	



INLET FOOTING										BRIDGE SHEET 10 OF 17									
Mark	Size	Length	# Pieces	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
WF1	#5	9'-0"	53	STR															
WF2	#5	9'-0"	53	STR															
WF3	#5	6'-3"	6	STR															
WF4	#5	6'-3"	6	STR															
WF5	#5	24'-0"	20	STR															
WF6	#5	16'-4"	20	STR															
WF7	#5	16'-5"	20	STR															
WF8	#7	8'-2"	17	NB		5'-0"	1'-2"												
WF9	#7	8'-2"	37	NB		5'-0"	1'-2"												
WF10	#5	9'-1"	45	NB		4'-3"	0'-10"												
SECTION SUMMARY TOTAL WEIGHT (lbs):																			
ITEM#	DESCRIPTION	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14	#15	TOTAL						
S44	REINFORCING STEEL			1882		682			175				4474						
S44.11	MECH. CONNECTOR																		
S44.2	EPOXY COATED																		
S44.21	EPOXY MECH. CONN.																		

OUTLET FOOTING					BRIDGE SHEET 11 OF 17														
Mark	Size	Length	# Pieces	Type	A	B	C	D	E	F	G	H	J	K	L	M			
EF1	#5	9'-0"	44	STR															
EF2	#5	9'-0"	85	STR															
EF3	#5	8'-3"	6	STR															
EF4	#5	8'-3"	12	STR															
EF5	#5	24'-0"	30	STR															
EF6	#5	16'-4"	20	STR															
EF7	#5	16'-5"	20	STR															
EF8	#7	8'-2"	17	NB		5'-0"	1'-2"												
EF9	#7	8'-5"	29	NB		7'-3"	1'-2"												
EF10	#5	7'-1"	40	NB		6'-3"	0'-10"												
SECTION SUMMARY TOTAL WEIGHT (lbs):																			
ITEM#	DESCRIPTION	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14	#15	TOTAL						
S44	REINFORCING STEEL			1939		714			255				3509						
S44.11	MECH. CONNECTOR																		
S44.2	EPOXY COATED																		
S44.21	EPOXY MECH. CONN.																		

INLET HEADWALL										BRIDGE SHEET 11 OF 17									
Mark	Size	Length	# Pieces	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
WW1	#6	9'-0"	15	STR															
WW2	#5	9'-0"	11	STR															
WW3	#5	10'-10"	13	STR															
WW4	#5	8'-11"	13	STR															
WW5	#5	5'-0"	7	T1	0'-6"	0'-10"	1'-2"	0'-10"	1'-2"										
WW6	#5	21'-4"	4	T1	4'-0"	13'-4"	4'-0"												4'-3"
																			</

OUTLET HEADWALL										BRIDGE SHEET 14 OF 17									
Mark	Size	Length	# Pieces	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
EW1	#6	10'-0"	15	STR															
EW2	#5	10'-0"	11	STR															
EW3	#5	11'-0"	14	STR															
EW4	#5	8'-11"	14	STR															
EW5	#5	5'-0"	7	T1	0'-6"	0'-10"	1'-2"	0'-10"	1'-2"			0'-6"							
EW6	#5	21'-4"	4	T1	4'-0"	13'-4"	4'-0"											4'-3"	

INLET NORTH WEST WINGWALL										BRIDGE SHEET 12 OF 17									
Mark	Size	Length	# Pieces	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
NW1	#6	9'-0"	22	STR															
NW2	#5	9'-0"	22	STR															
NW3	#5	19'-7"	24	STR															
NW4	#5	19'-7"	2	STR															
	</																		

OUTLET NORTH EAST WINGWALL										BRIDGE SHEET 15 OF 17									
Mark	Size	Length	# Pieces	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
NE1	#6	8'-8"	15	STR															
NE2	#5	8'-8"	15	STR															
NE3	#5	14'-7"	22	STR															
NE4	#5	14'-7"	2	STR															

INLET SOUTHWEST WINGWALL										BRIDGE SHEET 12 OF 1									
Mark	Size	Length	# Pieces	Type	A	B	C	D	E	F	G	H	I	J	K	L	M		
SW1	#6	9'-0"	15	STR															
SW2	#5	9'-0"	15	STR															
SW3	#5	14'-7"	20	STR															
SW4	#5	14'-7"	2	STR															
															</				

OUTLET SOUTHEAST WINGWALL										BRIDGE SHEET 15 OF 17									
Mark	Size	Length	# Pieces	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
SE1	#6	8'-8"	14	STR															
SE2	#5	8'-8"	14	STR															
SE3	#5	11'-7"	26	STR															
SE4	#5	11'-10"	2	STR															
SECTION SUMMARY TOTAL WEIGHT (lbs):																			
ITEM#	DESCRIPTION	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14	#15	TOTAL						
S44	REINFORCING STEEL			481	170								651						
S44.11	MECH. CONNECTOR																		
S44.2	EPOXY COATED																		
S44.21	EPOXY MECH. CONN.																		

GRAND
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